Surface Water Supply of Hawaii 1948–49

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1155

Prepared in cooperation with the Territory of Hawaii

Surface Water Supply of Hawaii 1948–49

Prepared under the direction of C. G. PAULSEN, *Chief Hydraulic Engineer*

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1155

Prepared in cooperation with the Territory of Hawaii

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1952

UNITED STATES DEPARTMENT OF THE INTERIOR

Oscar L. Chapman, *Secretary*

GEOLOGICAL SURVEY

W. E. Wrather, *Director*

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 35 cents (paper cover)

PREFACE

This report was prepared by the Geological Survey in cooperation with the Territory of Hawaii by personnel of the Water Resources Division under the direction of:

C. G. Paulsen_____*Chief Hydraulic Engineer*
J. V. B. Wells_____*Chief, Surface Water Branch*
B. J. Peterson_____*Chief, Annual Reports Section*

DISTRICT ENGINEER (SURFACE WATER)

M. H. Carson_____Honolulu, Hawaii.

CONTENTS

SURFACE WATER SUPPLY OF HAWAII, JULY 1, 1948, TO JUNE 30, 1949

SCOPE OF WORK

This volume contains results of measurements of the flow of streams and ditches in the Territory of Hawaii during the year ending June 30, 1949. Since the beginning of stream-gaging work in Hawaii, in 1910, records of flow of streams and ditches have been obtained at about 500 stations for periods ranging from a few months to 38 years. In addition, hundreds of miscellaneous measurements have been made, and rather extensive studies of ground water have been made on most of the islands.

In this volume are given the records of daily flow obtained at stations that were operated during the year ending June 30, 1949, and the results of miscellaneous measurements of stream flow made during that year. Most of the results of ground-water studies have been published in bulletins of the Territorial Division of Hydrography. See "Publications," on page 3 for a record of surface water-supply papers pertaining to Hawaii.

DEFINITION OF TERMS

The units in which stream-flow data are presented in this report are defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel having a cross-sectional area of 1 square foot and an average velocity of 1 foot a second.

An "acre-foot" is equivalent to 43,560 cubic feet and is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

In the Territory of Hawaii the unit most commonly used in measuring water is the "million gallons." This is used with two meanings--(1) to indicate a rate of flow and (2) to express an actual quantity of water. In the former sense "million gallons a day" is inferred, 1,000,000 gallons being taken as the unit of quantity and 24 hours as the unit of time. With this meaning the term is generally used in connection with pumping and irrigation. In the latter sense "million gallons" as an absolute quantity is used in the measurement of storage capacities of reservoirs.

The following convenient approximate relations exist between second-feet, million gallons a day, and acre-feet: 1 second-foot flowing 24 hours equals about 2 acre-feet; 1,000,000 gallons equals about 3 acre-feet or about 1.55 second-feet.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily discharge. All records of stage are obtained from water-stage recorders that give continuous records of the fluctuations. Measurements of discharge are usually made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. Occasionally discharge is determined from a weir or rating flume, using stan rd formulas, and for several stations the high-water discharge has been determined from ratings developed by the use of models.

Rating tables giving the discharge for any stage are prepared from the discharge measurements. The application of the daily gage heights to these rating tables gives the discharge from which the daily, monthly, and yearly discharges are determined. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the discharge is determined by the "shifting-control method," in which correction factors based on individual discharge measurements and notes by engineers are used in applying the gage heights to the rating tables. At times the stage-discharge relation for a station may be temporarily changed by the presence of aquatic growth or debris on the control. For such times the discharge is computed by what is essentially the "shifting-control" method, described above.

The data presented in this report comprise, for each gaging station, a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and runoff. Skeleton rating tables are published except for ditch, or spring stations. All rates of flow are expressed in million gallons a day.

The description of the station gives location, drainage area, records available, discharge corresponding to maximum and minimum recorded stages, average discharge if there has been more than 10 years of record, and under "Remarks," notes on accuracy of the records, diversions that decrease the flow at the gage and artificial regulation.

For some stations previously published records have been found to be in error on the basis of data or information obtained subsequently. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it easier to find such revised records, a paragraph headed "Revisions (fiscal years)" has been added to the station description of each station for which revised records have been published. Listed therein are all the reports in which revisions appear, each followed by the fiscal years for which figures are revised in that report. In listing the report number, W means Water-Supply Paper. In listing the years, fiscal years are indicated by only one year, for instance, 1933 stands for the fiscal year July 1, 1932, to June 30, 1933. If there were no daily, monthly, or annual figures of discharge involved in the revision, that fact is brought out by notations after the year dates as follows: (M) means that only the instantaneous maximum discharge was revised; (m) that only the instantaneous minimum was revised; and (P) that only peak discharges were revised.

The table of daily discharge gives, in general, the discharge corresponding to the mean daily gage heights. But when, owing to sudden or rapid diurnal fluctuation, the discharge obtained from the rating table by applying the mean daily gage height would not be within 2 percent of the true mean, the mean has been obtained by averaging discharges for intervals during the day or by use of the graphic integrator.

Records of daily discharge are published on the basis of Hawaiian standard time.

In the table of monthly discharge the column headed "Maximum" gives the flow for the day when the total discharge was greatest. This does not correspond to the rate of flow at the crest of the flood. The maximum rate of flow is given in the station description under the heading "Extremes," and the corresponding stage is always taken from the water-stage recorder graph unless otherwise noted. Likewise, in the column headed "Minimum" the quantity given is the flow for the day when the total discharge was least. The columns headed "Mean" give the average flow in million gallons a day and cubic feet a second during

the month. The "total runoff in million gallons" is the sum of the daily flows, and the "total runoff in acre-feet" is computed from the total monthly discharges in million gallons. Peak discharges, above a determined base, with the times of their occurrence, are given below the table of monthly discharge for most stations.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanency of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

A general statement under "Remarks" gives the accuracy of records, the terms "excellent," "good," "fair," and "poor" indicating that the record is probably accurate within 5, 10, 15, and 20 percent, respectively.

It should be borne in mind that the observation in each succeeding year may be expected to throw new light on data previously published.

Computations are carried to not more than three significant figures, except that monthly and yearly total runoff (million gallons and acre-feet) above 10,000 are carried to four significant figures.

PUBLICATIONS

The following table lists, by years and numbers, the papers on the surface water supply of Hawaii published during the period 1903-49 and, used in conjunction with the list of stations maintained, which is given in Water-Supply Paper 795, provides a convenient index for finding the data for any station. Except as indicated, the year or years covered by each report begin July 1 and end of June 30. The data for any particular station will be found in the reports covering the years during which that station was maintained, unless, owing to undeveloped rating curves, publication was postponed. Occasionally data are revised and republished in later papers. Miscellaneous discharge measurements made during any year at points other than regular gaging stations are included in the data published for that year.

Numbers of water-supply papers containing data on the surface water supply of Hawaii, 1903-49

Year	Number	Year	Number	Year	Number
1903.....	*77	1923-24.....	595	1936-37.....	835
1909-11†.....	318	1924-25.....	615	1937-38.....	865
1912†.....	336	1925-26.....	635	1938-39.....	885
1913†.....	373	1926-27.....	655	1939-40.....	905
1913-15.....	430	1927-28.....	675	1940-41.....	935
1915-16.....	445	1928-29.....	695	1941-42.....	965
1916-17.....	465	1929-30.....	710	1942-43.....	985
1917-18.....	485	1930-31.....	725	1943-44.....	1015
1918-19.....	515	1931-32.....	740	1944-45.....	1045
1919-20.....	516	1932-33.....	755	1945-46.....	1065
1920-21.....	535	1933-34.....	770	1946-47.....	1095
1921-22.....	555	1934-35.....	795	1947-48.....	1125
1922-23.....	575	1935-36.....	815	1948-49.....	1155

* This paper, entitled "Water resources of Molokai," by Waldemar Lindgren, contains data on both the surface and ground-water supplies of the island named.

† Calendar years. Data for the last half of the calendar year 1913 appears not only in Water-Supply Paper 373 but also in Water-Supply Paper 430, the first of the reports covering a year ending June 30.

A summary of records of flow in streams and ditches in the Territory of Hawaii was published in 1939 by the Territorial Planning Board. This report, entitled "Surface-water resources of the Territory of Hawaii, 1901-38," gives, by gaging stations for the periods of record, (1) monthly-discharge tables, which show for each month the maximum,

minimum, and mean daily discharge and the total discharge, and (2) duration-discharge tables. Nearly all available records of flow in the Territory up to December 1938 were considered in making the summary. Some of these records are not contained in publications of the Geological Survey; some are revisions of records published in the Survey's water-supply papers.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The following table lists the gaging stations in the Territory of Hawaii at which records of discharge were collected during the fiscal year July 1948 to June 1949 by agencies other than the Geological Survey. The records for these stations are not contained in the publications of the Geological Survey and, except as indicated, have not been published elsewhere.

Records of discharge collected by agencies other than the Geological Survey

ISLAND OF KAUAI

Stream	Location	Period	Operated by
East Lawai storm ditch..	Near Government Road, near Kalaheo.	1924-49	McBryde Sugar Co.
Eleele ditch.....	....do.....	1924-49	Do.
Hanalei ditch.....	Above Kalihiwai Reservoir, near Kilauea.	1923-49	Kilauea Sugar Plantation Co.
Hanamaulu ditch.....	Below intake, near Hanamaulu.....	1925-49	Lihue Plantation Co.
Hanapepe field ditch....	Below Hanapepe River intake, near Eleele.	1924-49	McBryde Sugar Co.
Hanapepe Stream.....	At tidewater, near Eleele.....	1924-49	Do.
Kamooloa ditch.....	Below Kauai Belt Road crossing, near Koloa.	1924-49	Do.
Kealia River.....	1 mile west of Kaneha Reservoir and 5½ miles northwest of Kealia.	1936-49	Lihue Plantation Co.
Koloa ditch.....	4½ miles north of Koloa and 6½ miles west of Lihue.	1927-49	Do.
Koula ditch.....	In Hanonui Valley, near Makaweli...	1949	Gay & Robinson.
Lawai Stream.....	½ mile above cannery, near Kalaheo.	1924-49	McBryde Sugar Co.
Lihue lower ditch.....	Below intake, near Lihue.....	1925-49	Lihue Plantation Co.
Lihue upper ditch.....	....do.....	1925-49	Do.
Olokele ditch.....	At powerhouse, near Makaweli.....	1926-49	Gay & Robinson.
Wahiawa main stream.....	Above Alexander Reservoir, near Kalaheo.	1924-49	McBryde Sugar Co.
Wahiawa Stream, East Branch.	....do.....	1929-49	Do.
West Lawai ditch.....	Near camp 12, near Kalaheo.....	1924-49	Do.

ISLAND OF OAHU

Alewa Heights Spring....	Below reservoir 3.....	1932-49*	Board of Water Supply City and County of Honolulu.
Booth Springs.....	In Pauoa Valley, at altitude 685 feet.	1929-49*	Do.
Helemano ditch.....	About 3 miles below Upper Helemano Reservoir.	1933-49	Waialua Agricultural Co.
Hering Springs.....	In Makiki Valley, at altitude 970 feet.	1925-49*	Board of Water Supply City and County of Honolulu.
Kahuawai Springs.....	In Pauoa Valley, at altitude 618 feet.	1925-49*	Do.
Kalihi tunnels.....	At diversion, at altitude 650 feet..	1926-49*	Do.
Kamananui ditch.....	In Kawailoa Gulch about 500 yards above third siphon from Government Road.	1934-49	Waialua Agricultural Co.
Kipapa Stream.....	At altitude 375 feet.....	1917-49	Waiahole Water Co.
Makiki Springs.....	In Makiki Valley, at altitude 350 feet.	1926-49*	Board of Water Supply City and County of Honolulu.
Manoa tunnels.....	Upper Manoa Valley.....	1925-49*	Do.
Nuuanu tunnels.....	At Lower Luakaha.....	1926-49*	Do.
Nuuanu tunnel 3.....	At overflow, in upper Nuuanu Valley	1931-49*	Do.
Palolo tunnel.....	Upper Palolo Valley.....	1926-49*	Do.
Wahiawa Reservoir Outlet	About 1,200 feet below dam.....	1912-49*	Wahiawa Water Co.
Waiahole tunnel.....	At adit 8.....	1916-49	Waiahole Water Co.
Waiawa Stream.....	At altitude 750 feet.....	1917-49	Do.
Waikakalaua Stream.....	....do.....	1917-49	Do.
Waimalu Stream.....	At altitude 535 feet, near Aiea.....	1947-49	Do.

* Published in biennial reports of Honolulu Sewer & Water Commission and of Honolulu Board of Water Supply.

ISLAND OF MAUI (WEST MAUI)

Everett ditch.....	Below intake, near Wailuku.....	1935-49	Wailuku Sugar Co.
Honokohau tunnel.....	At outlet of tunnel, at Mahinahina weir.	1917-49	Pioneer Mill Co.
Iao-Waikapu ditch.....	At lower end of tunnels, near Wailuku.	1923-49	Wailuku Sugar Co.
Kahoma tunnel.....	2,000 feet upstream from outlet, above Lahaina.	1920-49	Pioneer Mill Co.
Kama ditch.....	Below intake, near Wailuku.....	1933-49	Wailuku Sugar Co.
Kanaha ditch.....	At intake in Kanaha Gulch, above Lahainaluna.	1921-49	Pioneer Mill Co.
Kauaula tunnel.....	At outlet, above Lahaina.....	1920-49	Do.

ISLAND OF MAUI (WEST MAUI)--Continued

Stream	Location	Period	Operated by
K-3 flume	Above Lahainaluna	1931-49	Pioneer Mill Co.
Launiupoko ditch	At outlet, above Lahaina	1921-49	Do.
Maniania ditch	Below intake, near Wailuku	1923-49	Wailuku Sugar Co.
North Waiehu Stream	Near end of Waiehu Camp road, near Wailuku.	1922-49	Do.
South Waikapu ditch	Above second lateral, near reservoir 1, near Waikapu	1935-49	Do.
Spreckels ditch	Below intake, near Waihee	1931-49	Do.
Ukumehame ditch	At outlet in Ukumehame Gulch, near Olowalu.	1931-49	Pioneer Mill Co.
Waihee ditch	Below intake, near Waihee	1931-49	Wailuku Sugar Co.
	ISLAND OF MAUI (EAST MAUI)		
Hanawi Stream	Below Government Road, near Nahiku	1927-32 1947-49	East Maui Irrigation Co.
	ISLAND OF HAWAII		
Hionamoa Gulch	Below all development tunnels, near Pahala.	1926-49	Hawaiian Agricultural Co.
Honokaape ditch	At Kukuihaele Village	1923-49	Hawaiian Irrigation Co.
Keaiwa Gulch	Below all development tunnels, near Pahala.	1926-49	Hawaiian Agricultural Co.
Kohala ditch	At Awini weir in Honokane, near Niulii.	1917-49†	Kohala Ditch Co.
Do	At Niulii weir, near Niulii	1917-49†	Do.
Lower Hamakua ditch	At main weir, near Kukuihaele	1921-49†	Hawaiian Irrigation Co.
Moaula Gulch	Below all development tunnels, near Pahala.	1929-49	Hawaiian Agricultural Co.
Noguchi tunnel 19	5.3 miles from Pahala, at altitude 3,500 feet.	1928-49	Do.
Pololu Inlet 1	At Pololu, near Niulii	1929-49	Kohala Ditch Co.
Pololu Inlet 2	In Waiakalae Gulch at Pololu, near Niulii.	1929-49	Do.
Pololu Inlet 3	In Opaepilau Gulch, above Kohala ditch, near Niulii.	1937-49	Do.
Pololu Inlet 5	In Niulii Gulch, above Kohala ditch, near Niulii.	1937-49	Do.
Pololu Inlet 6	In Waikane Gulch, above Kohala ditch, near Niulii.	1937-49	Do.
Puwaiole Stream	Above Kohala ditch, near Halawa	1937-49	Do.
Waiapuka Stream	Above Kohala ditch, near Niulii	1929-49	Do.
Waipuhi Stream	Above Kohala ditch, near Halawa	1933-49	Do.
Waipunalau Stream	....do	1929-49	Do.

† Records for some earlier years published in water-supply papers of Geological Survey.

COOPERATION

The work during the year ending June 30, 1949, was done under cooperative agreement with the Territory of Hawaii through the commissioner of public lands. Assistance in collecting records was rendered also on the island of Kauai by the Kekaha Sugar Co. Ltd., the McBryde Sugar Co. Ltd., the East Kauai Water Co. Ltd., the Kilauea Sugar Co. Ltd., and the Lihue Plantation Co. Ltd.; on the island of Oahu by the Wahiawa Water Co. Ltd.; on the island of Maui by the Pioneer Mill Co. Ltd., and the East Maui Irrigation Co. Ltd., and the Maui County Engineer; and on the island of Hawaii by the City of Hilo Water Works, the Kohala Ditch Co. Ltd., and the Olaa Sugar Co. Ltd.

Acknowledgment of records collected by individuals or corporations is made in connection with the description of each station for which such records were furnished.

DIVISION OF WORK

The stream-gaging work was conducted by the water resources division of the Geological Survey, Carl G. Paulsen, chief hydraulic engineer, and Joseph V. B. Wells, chief of the surface water branch. The data were collected and prepared for publication under the direction of M. H. Carson, district engineer, Honolulu. The records were reviewed and the manuscript prepared for publication under the direction of B. J. Peterson, chief, annual reports section.

ISLAND OF KAUAI

Waimea River below Kekaha ditch intake, near Waimea

Location.--Lat. 22°02'40", long. 159°38'35", in Waimea Canyon, 500 feet downstream from Kekaha ditch lower intake and 6½ miles northeast of Waimea. Altitude of gage, 490 feet (by barometer).

Drainage area.--45.0 square miles.

Records available.--July 1921 to June 1949.

Average discharge.--23 years (1925-47, 1948-49), 43.0 million gallons a day (66.5 second-feet).

Extremes.--Maximum discharge during year, 18,000 million gallons a day (27,900 second-feet) Feb. 7 (gage height, 24.2 feet, from floodmark), from rating curve extended above 500 million gallons a day by test on model of station site; no flow for several days.
1921-49: Maximum discharge, that of Feb. 7, 1949; no flow at times.

Remarks.--Records poor. Kokee and Kekaha ditches divert water above station, taking practically all water at low and medium stages for irrigation near Waimea and Kekaha.

Revisions (fiscal years).--W 740: 1921-31. W 1125: 1947.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.1	0	1.4	1.4	26.5	1,020	109	87	101	11.2	16.1	
2	.5	.2	1.3	1.4	2.9	238	79	79	138	9.4	7.8	
3	33.5	.2	29	1.6	103	105	49	72	81	9.0	4.7	4
4	6.9	0	3.1	2.2	17.6	121	27	65	54	8.6	4.4	
5	11.0	51	1.2	14.9	2.4	165	36.5	65	46	7.4	4.2	
6	47	6.2	.9	9.7	1.6	105	502	87	41	6.3	4.0	
7	29	1.2	49	1.6	105	55	181	4,500	95	6.3	3.8	
8	6.5	.9	14.7	1.3	107	88	848	1,500	275	5.9	3.6	
9	8.4	.3	1.4	1.1	13.5	829	541	1,200	76	5.5	3.6	
10	1.0	.1	1.2	.6	2.2	674	334	600	44	5.5	3.3	
11	.7	0	.8	.4	125	245	215	400	39	26	3.3	
12	6.6	7.9	.6	.2	207	231	145	300	103	19.4	3.3	
13	5.6	133	.5	0	89	437	184	250	203	9.0	3.6	1.3
14	.8	2.4	.5	0	25	165	245	200	58	8.2	4.0	
15	76	1.2	.5	0	6.2	270	800	170	45	7.8	4.2	
16	67	127	.4	0	8.2	92	2,000	140	38	6.3	31	
17	106	12.6	.4	0	88	158	1,700	141	31.5	5.1	1,600	
18	83	5.7	.3	0	24.5	107	1,400	109	29	4.9	200	
19	10.7	1.4	.2	0	2.6	75	1,600	83	29	4.9	100	
20	19.5	7.4	.1	11.3	1.4	225	2,000	69	35	4.9	70	
21	1.7	2.5	0	26	1.3	268	600	56	35	5.5	50	
22	1.1	1.4	0	104	2.0	204	350	52	205	12.2	40	
23	1.0	1.2	0	170	97	200	250	50	119	54	35	6.5
24	.9	1.1	2.0	33.5	70	462	220	49	93	164	20	
25	.5	1.1	1.4	11.1	73	230	180	44	119	11.5	8	
26	.2	1.7	1.1	13.1	158	120	150	42	86	7.0	7.5	
27	.2	1.4	55	99	309	88	450	41	29	11.6	7.5	
28	0	187	246	194	177	125	200	42	127	4.7	10	3.5
29	0	94	11.8	58	385	338	130	-	49	4.4	22	
30	0	10.5	1.6	191	188	448	110	-	35.5	5.1	6	
31	0	1.7	-	129	-	174	100	-	14.8	-	5.5	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	106	0	17.0	26.3	526	1,620
August	187	0	21.4	33.1	662	2,030
September	246	0	14.2	22.0	426	1,310
October	194	0	34.7	53.7	1,080	3,300
November	385	1.3	80.6	125	2,420	7,420
December	1,020	55	260	402	8,060	24,740
Calendar year	-	-	-	-	-	-
January	2,000	27	508	786	15,740	48,290
February	4,500	41	375	580	10,490	32,200
March	275	14.8	79.8	123	2,470	7,590
April	164	4.4	15.1	23.4	452	1,390
May	1,600	3.3	73.8	114	2,290	7,020
June	-	-	2.98	4.61	89.5	275
Fiscal year 1948-49	4,500	0	122	189	44,710	137,200

Peak discharge (base, 5,000 m.g.d.).--Jan. 16 (time and discharge unknown); Jan. 20 (time and discharge unknown); Feb. 7 (time unknown) 18,000 m.g.d. (27,900 sec.-ft.); May 17 (3 p.m.) 5,430 m.g.d. (8,400 sec.-ft.).

Note.--No gage-height record Jan. 15-31, Feb. 7-16, May 18 to June 30; discharge computed on basis of records for Waimea River near Waimea.

Waimea River near Waimea

Location.--Lat. 21°58'55" (corrected), long. 159°39'50", 1.2 miles upstream from confluence with Makaweli River and 1.8 miles north of Waimea. Altitude of gage, 25 feet (hand levels from estuary at confluence with Makaweli River).

Drainage area.--57.8 square miles.

Records available.--July 1910 to October 1919, November 1943 to June 1949.

Extremes.--Maximum discharge during year, 24,000 million gallons a day (37,100 second-feet) Feb. 7 (gage height, 19.3 feet), from rating curve extended above 3,300 million gallons a day on basis of slope-area determinations at gage heights 10.28, 13.6, and 18.7 feet; minimum, less than 0.01 million gallons a day (0.02 second-foot) Sept. 27. 1943-49: Maximum discharge, that of Feb. 7, 1949; minimum, that of Sept. 27, 1948.

Remarks.--Records good above 1 million gallons a day, poor below.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 7						Feb. 8 to June 30					
1.4	0.33	2.2	20.6	5.0	670	1.5	1.97	2.0	14.6	3.2	160
1.5	.62	2.4	36.2	6.0	1,160	1.6	3.33	2.2	24.8	3.6	270
1.6	1.2	2.6	57	7.0	1,810	1.7	5.2	2.4	40	4.2	500
1.7	2.3	2.9	94	8.5	3,050	1.8	7.6	2.6	60	5.0	820
1.8	4.0	3.2	137	10.0	4,400	1.9	10.7	2.9	102	6.5	1,620
1.9	6.5	3.6	217	11.5	5,950						
2.0	10.0	4.2	390								

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.7	1.6	0.4	0.8	39	870	88	101	78	13.0	23	5.7
2	1.0	1.2	.5	.2	7.4	223	67	101	155	18.4	15.7	4.6
3	18.6	.9	10.3	1.3	68	98	33	88	82	15.5	9.2	4.2
4	27	.9	8.1	3.2	26	88	21	81	58	11.5	8.2	4.0
5	22.5	32	1.3	.9	3.0	119	14.2	81	48	10.1	7.6	3.6
6	38	15.3	.8	19.3	.5	88	335	101	47	10.1	7.4	2.8
7	45	.8	19.4	1.4	18.5	49	124	6,110	64	9.8	7.4	1.4
8	6.2	.4	23.5	.5	128	58	653	1,870	262	9.8	7.4	1.3
9	16.7	.4	.9	.4	34	501	488	1,600	84	9.5	7.4	1.2
10	4.1	.4	.4	.4	13.1	537	276	714	50	9.8	7.4	1.2
11	1.1	.4	.3	.5	78	206	157	460	45	23.5	7.4	1.2
12	.9	.5	.3	.7	163	133	115	305	63	34.5	7.4	1.5
13	12.4	91	.3	1.0	84	334	122	255	240	14.6	7.4	1.4
14	1.7	17.3	.4	1.2	37.5	119	179	210	63	13.8	9.1	2.0
15	30	2.1	.3	1.6	10.0	189	1,140	198	45	14.2	9.8	3.1
16	78	83	.4	1.8	8.1	63	2,480	198	44	13.0	10.7	2.2
17	74	28.5	.5	1.7	66	107	1,790	160	43	12.6	1,280	1.7
18	86	10.8	.6	.8	37	94	1,560	128	42	10.7	175	1.6
19	20.5	1.1	.6	.8	12.4	62	1,920	102	40	9.8	61	1.4
20	18.9	8.8	.6	.5	7.4	137	2,620	89	44	9.8	43	1.5
21	7.1	9.0	.7	24.5	4.4	163	644	75	45	10.7	35	3.2
22	.6	1.9	.7	22.5	1.6	155	420	66	172	10.4	32	17.6
23	.4	.4	.7	158	56	76	300	61	121	67	24	12.8
24	.4	.2	.5	31	52	359	242	56	87	188	14.6	7.8
25	.3	.3	1.2	12.3	72	148	194	53	111	22	10.1	1.8
26	.2	1.4	.2	11.1	98	106	173	52	123	9.8	8.2	2.3
27	.3	2.9	.2	46	227	54	319	54	47	17.2	7.4	3.3
28	.6	132	202	163	123	88	216	51	99	8.8	9.9	1.5
29	.7	96	27.5	43	272	196	146	-	82	7.6	32	1.4
30	1.1	13.1	1.7	140	186	324	130	-	40	7.6	14.0	15.1
31	1.4	2.3	-	94	-	131	122	-	27	-	8.2	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	86	0.2	16.8	26.0	520	1,600
August	132	.2	18.0	27.9	557	1,710
September	202	.2	10.2	15.8	305	937
October	163	.2	25.3	39.1	784	2,410
November	272	.5	64.4	99.6	1,930	5,930
December	870	49	190	294	5,880	18,030
Calendar year 1948	3,110	.2	93.7	145	34,310	105,300
January	2,620	14.2	551	853	17,090	52,440
February	6,110	51	479	741	13,420	41,180
March	262	27	82.3	127	2,550	7,830
April	188	7.6	20.8	32.2	623	1,910
May	1,280	7.4	61.5	95.2	1,910	5,850
June	17.6	1.2	3.81	5.89	114	351
Fiscal year 1948-49	6,110	.2	125	193	45,680	140,200

Peak discharge (base, 5,600 m.g.d.).--Jan. 16 (4 p.m.) 6,620 m.g.d. (10,200 sec.-ft.); Jan. 20 (7 a.m.) 7,100 m.g.d. (11,000 sec.-ft.); Feb. 7 (2:30 p.m.) 24,000 m.g.d. (37,100 sec.-ft.).

Kawaikoi Stream near Waimea

Location.--Concrete control, lat. 22°08'00", long. 159°37'15", at old trail crossing, 12½ miles northeast of Waimea. Altitude of gage, 3,420 feet (by barometer).

Drainage area.--4.1 square miles.

Records available.--April 1909 to June 1917, August 1919 to June 1949.

Average discharge.--30 years (1919-49), 21.2 million gallons a day (32.8 second-feet).

Extremes.--Maximum discharge during year, 3,370 million gallons a day (5,210 second-feet) Feb. 7 (gage height, 11.10 feet), from rating curve extended above 180 million gallons a day on basis of slope-area determination at gage height 13.43 feet; minimum, 3.05 million gallons a day (4.7 second-feet) Sept. 17, June 17, 18.
1909-17, 1919-49: Maximum discharge not determined, occurred Dec. 18, 1916 (gage height, 15.2 feet); minimum, 1.2 million gallons a day (1.9 second-feet) Sept. 29 to Oct. 2, Oct. 9-12, 1944, Feb. 19-25, 1945.

Remarks.--Records good. No diversions above station.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

2.0	2.7	2.6	14.4	4.0	141
2.1	3.8	2.8	21.5	4.5	241
2.2	5.1	3.0	30.5	5.0	355
2.3	6.8	3.2	42	5.5	500
2.4	8.9	3.4	59	5.9	635
2.5	11.4	3.7	93		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.1	9.2	4.8	22	18.0	125	25	11.4	29.5	14.7	24.5	4.4
2	5.6	6.1	4.8	20	42	29.5	20	10.6	26.5	12.5	11.0	4.2
3	5.0	6.6	8.1	21	57	18.8	16.7	9.9	14.1	14.4	8.3	4.1
4	6.4	6.3	5.6	10.4	16.8	15.1	14.7	9.2	8.3	10.7	7.0	4.1
5	26	9.0	4.2	8.1	13.5	21.5	15.6	8.9	6.6	8.7	6.3	4.1
6	42	6.8	3.6	8.3	10.6	26.5	75	9.6	6.0	8.1	5.8	3.8
7	20	4.7	3.45	6.0	51	15.4	36.5	621	65	8.3	5.6	3.6
8	19.2	4.2	3.7	5.4	31	34.5	118	89	81	7.0	5.3	3.6
9	11.2	3.8	3.45	4.8	13.6	330	40	97	15.9	6.1	5.0	3.45
10	7.0	3.6	3.15	4.3	16.1	138	104	38	9.4	12.6	4.7	3.25
11	7.4	4.9	3.15	4.1	70	53	33	24.5	7.8	56	4.6	3.35
12	27.5	13.0	3.35	4.1	30	68	29.5	18.8	91	20	4.4	4.7
13	11.0	49	8.9	11.8	20.5	92	27.5	18.5	47	21	4.4	3.8
14	6.3	8.2	4.9	9.6	12.9	41	27.5	15.7	13.8	16.7	5.0	3.6
15	55	5.1	3.6	4.7	19.3	43	126	15.1	10.9	13.0	4.6	3.35
16	17.9	26.5	3.15	3.95	17.7	25	291	26	9.6	8.3	7.1	3.15
17	55	11.4	3.05	3.6	53	40	184	15.1	8.5	6.8	153	3.05
18	37.5	8.1	6.4	3.35	13.7	28	136	13.2	7.6	6.3	14.0	3.05
19	17.1	5.3	9.5	3.25	9.9	23.5	183	10.4	8.8	5.8	8.3	3.25
20	26	6.0	4.3	32	8.7	58	179	9.4	15.2	5.6	6.6	5.1
21	9.4	6.1	3.45	17.7	7.8	55	42	8.5	8.3	5.4	6.0	18.8
22	8.1	4.6	3.25	72	8.1	43	30	7.8	55	45	5.4	15.5
23	8.5	4.1	3.45	55	36	90	24	8.3	27	62	5.1	17.8
24	6.3	3.7	3.95	30	15.8	112	20.5	7.4	16.4	69	4.8	6.3
25	5.4	3.7	3.8	23	13.2	52	17.0	7.0	24	16.0	8.3	5.0
26	5.1	3.7	4.1	36	21	28.5	15.7	6.6	33	39	9.0	7.2
27	4.8	3.8	56	63	94	30.5	107	6.8	11.2	25	6.8	4.4
28	4.4	42	85	63	60	50	25	7.6	26	10.6	19.0	4.5
29	4.3	23	22	36	70	127	16.0	-	19.0	8.5	10.6	19.4
30	6.0	8.1	20.5	53	48	135	14.1	-	29	26.5	6.0	9.8
31	14.2	5.6	-	61	-	40	12.6	-	13.2	-	4.8	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	55	4.3	15.6	24.1	485	1,490
August	49	3.6	9.88	15.3	306	940
September	85	3.05	10.0	15.5	301	923
October	72	3.25	22.6	35.0	700	2,150
November	94	7.8	30.0	46.4	899	2,760
December	330	15.1	64.2	99.3	1,990	6,100
Calendar year 1948	752	3.05	31.3	48.4	11,440	35,120
January	291	12.6	64.7	100	2,010	6,160
February	621	6.6	40.4	62.5	1,130	3,470
March	91	6.0	24.0	37.1	745	2,290
April	69	5.4	19.0	29.4	570	1,750
May	153	4.4	12.3	19.0	381	1,170
June	19.4	3.05	6.12	9.47	184	564
Fiscal year 1948-49	621	3.05	26.6	41.2	9,700	29,770

Peak discharge (base, 850 m.g.d.).--Dec. 9 (7 a.m.) 1,110 m.g.d. (1,720 sec.-ft.); Jan. 17 (10 a.m.) 990 m.g.d. (1,530 sec.-ft.); Feb. 7 (2:30 p.m.) 3,370 m.g.d. (5,210 sec.-ft.).

Mohihi Stream near Waimea

Location.--Lat. 22°07'05", long. 159°36'15", at upper trail crossing, 3.8 miles northeast of confluence of Waiahulu and Poomau Streams and 12 miles northeast of Waimea. Altitude of gage, 3,500 feet (from topographic map).

Drainage area.--1.6 square miles.

Records available.--June 1920 to October 1926, October 1936 to June 1949. April 1909 to December 1912 at site 2 miles downstream (fragmentary). Prior to July 1947, published as Mohihi Stream at altitude 3,500 feet, near Waimea.

Average discharge.--18 years (1920-26, 1937-49), 5.05 million gallons a day (7.81 second-feet).

Extremes.--Maximum discharge during year, 795 million gallons a day (1,230 second-feet) Feb. 7 (gage height, 6.10 feet), from rating curve extended above 21 million gallons a day on basis of logarithmic plotting; minimum daily, 0.65 million gallons a day (1.01 second-feet) Sept. 16, 17.

1920-26, 1936-49: Maximum discharge, 915 million gallons a day (1,420 second-feet) Oct. 2, 1940 (gage height, 6.40 feet, from floodmarks), from rating curve extended above 21 million gallons a day on basis of logarithmic plotting; minimum, 0.05 million gallons a day (0.08 second-foot) May 3, 4, 1941.

Remarks.--Records good except those for periods of no gage-height record, which are fair. No diversions above station.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.1	0.70	1.6	4.3	2.7	36
1.2	1.08	1.8	7.2	3.1	60
1.3	1.60	2.0	11.3	3.5	96
1.4	2.35	2.3	20	4.0	166

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.60	1.29	0.95	3.5	4.8	31.5	7	3.55	3.7	2.6	5.8	1.39
2	1.18	1.18	.95	3	3.65	10.6	6	3.35	7.0	2.3	2.7	1.29
3	1.28	1.18	2.8	3.35	11.4	6.9	5	3.05	4.0	2.35	1.82	1.18
4	1.68	1.39	1.5	2.55	4.5	8.0	4.5	2.9	2.55	2.35	1.55	1.18
5	3.5	4.3	.9	2.9	3.15	7.1	5	2.8	2.05	1.98	1.39	1.13
6	9.0	2.5	.8	3.05	2.45	6.7	16	3.45	1.82	1.75	1.29	1.08
7	5.2	1.39	.75	1.75	8.4	4.6	9	167	5.8	1.60	1.18	1.00
8	2.8	1.13	.8	1.50	10.0	6.8	30	38	16.9	1.50	1.18	.97
9	2.05	.93	.75	1.24	3.9	57	12	51	4.7	1.39	1.08	.93
10	1.39	.85	.7	1.08	3.45	40	19	19.7	2.6	1.39	1.04	.89
11	1.13	.81	.7	1.00	14.4	16.1	9	11.6	2.1	6.2	1.00	.89
12	1.58	.93	.75	.93	15.3	17.4	8	7.8	6.2	5.6	.97	.89
13	2.6	6.1	3.3	.97	6.8	25.5	7.5	6.4	14.5	3.15	.97	.93
14	1.44	2.35	1.0	1.04	3.8	10.9	7.5	5.3	4.0	2.55	1.08	.97
15	6.8	1.34	.8	.97	3.35	14.9	30	4.8	2.8	2.35	1.13	.89
16	6.3	9.5	.65	.89	3.45	7.0	50	5.6	2.35	1.90	2.8	.85
17	9.2	3.05	.65	.85	6.8	7.1	40	4.7	2.05	1.60	56	.81
18	6.3	1.82	2.5	.81	3.8	5.6	30	4.0	1.90	1.44	7.3	.81
19	3.35	1.39	3.6	.81	2.55	4.3	40	3.45	1.82	1.34	3.65	.81
20	6.0	1.24	.95	1.82	2.05	12.6	40	3.05	2.1	1.34	2.7	1.00
21	2.35	1.18	.75	4.0	1.82	16.5	14	2.8	2.05	1.29	2.35	1.44
22	1.60	1.08	.7	13.6	1.68	13.5	11	2.55	10.3	3.9	1.98	2.1
23	1.50	.93	.75	15.9	7.3	17.1	8.5	2.35	5.6	10.5	1.82	2.85
24	1.24	.89	.8	6.6	4.0	29.5	7.2	2.3	4.2	20.5	1.68	1.82
25	1.04	.8	.8	3.55	4.7	15.6	6.2	2.1	5.2	4.2	1.60	1.29
26	1.00	.8	.9	4.9	8.4	8.6	5.3	1.98	6.1	3.0	1.60	2.05
27	.93	.85	7	12.8	27.5	6.9	18.9	1.98	3.05	3.05	1.68	1.39
28	.89	9	13	17.5	22.5	10.2	9.5	1.98	4.0	2.1	4.0	1.13
29	.85	5.5	4	9.2	34.5	28	5.5	-	4.8	1.68	3.45	2.85
30	.85	1.5	3.5	16.4	18.7	32	4.6	-	5.4	3.4	2.05	2.6
31	.97	1.0	-	9.7	-	11	4.0	-	3.25	-	1.60	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	9.2	0.85	2.83	4.38	87.6	269
August	9.5	.8	2.20	3.40	68.2	209
September	13	.65	1.93	2.99	58.0	178
October	17.5	.81	4.78	7.40	148	455
November	34.5	1.68	8.30	12.8	249	764
December	57	4.3	15.8	24.4	490	1,500
Calendar year 1948	120	.65	7.40	11.4	2,710	8,300
January	50	4.0	15.2	23.5	470	1,440
February	167	1.98	13.2	20.4	370	1,130
March	16.9	1.82	4.67	7.23	145	445
April	20.5	1.29	3.34	5.17	100	308
May	56	.97	3.89	6.02	120	370
June	2.85	.81	1.31	2.03	39.4	121
Fiscal year 1948-49	167	.65	6.43	9.95	2,350	7,190

Peak discharge (base, 200 m.g.d.).--About Jan. 17 (time unknown) 246 m.g.d. (381 sec.-ft.); Feb. 7 (2 p.m.) 795 m.g.d. (1,230 sec.-ft.); May 17 (6:30 a.m.) 214 m.g.d. (331 sec.-ft.).

Note.--No gage-height record Aug. 25 to Oct. 2, Dec. 30 to Jan. 23; discharge computed on basis of records for nearby streams.

Kokee ditch near Waimea

Location.--Suppressed weir control, lat. 22°06'25", long. 159°40'45", 1,000 feet west of road and 10½ miles north of Waimea. Altitude of gage, 3,310 feet (by barometer).

Records available.--September 1926 to June 1949.

Average discharge.--22 years (1927-49), 16.6 million gallons a day (25.7 second-feet).

Extremes.--Maximum discharge during year, 71 million gallons a day (110 second-feet) May 17 (gage height, 2.56 feet); no flow Nov. 14, Feb. 7, 8.
1926-49: Maximum discharge, 78 million gallons a day (121 second-feet) Dec. 7, 1946; no flow at times.

Remarks.--Records good. Kokee ditch diverts water at altitude 3,400 feet from all streams tributary to Waimea River west of Mohihi Stream for irrigation near Kekaha.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.6	12.1	6.8	21	16.7	24.5	11.7	18.2	21	19.5	27.5	8.7
2	8.7	8.9	6.6	22	27.5	22.5	12.4	17.0	19.1	18.2	17.0	8.1
3	8.3	8.5	8.9	22	40	23	20	21	17.0	19.5	13.0	8.0
4	8.0	9.4	7.8	14.1	21	15.8	22	22	18.2	17.0	11.5	7.8
5	21	10.3	5.6	10.0	17.0	21	23	22	18.2	14.6	10.4	7.8
6	33.5	10.6	4.8	11.0	14.1	24.5	46	18.2	17.0	13.7	9.6	7.4
7	22.5	7.1	4.7	7.8	21	21	27	18.1	28	13.7	9.2	7.1
8	22	6.1	4.7	7.1	34.5	30	24	9.2	40	12.5	9.1	6.9
9	15.8	5.5	4.7	6.3	20	36	14.5	11.4	26	11.2	8.9	6.6
10	10.6	5.2	4.2	5.5	18.2	18.9	13.9	10.2	19.5	12.8	8.0	6.4
11	9.8	4.8	3.95	4.8	44	14.6	11.1	7.1	17.0	35	8.0	6.3
12	22	12.5	4.2	4.7	33.5	22	17.8	14.3	26.5	23	7.8	7.6
13	16.4	30	8.9	9.3	24.5	24	19.4	17.0	37	22	7.6	6.8
14	9.8	11.6	6.8	12.0	17.8	27	13.4	14.1	23	22	8.3	6.6
15	19.8	7.8	5.0	6.1	19.5	30.5	16.4	12.1	21	19.5	8.1	6.3
16	20.5	19.6	4.2	5.0	21	26	11.0	11.0	18.2	13.9	9.4	6.1
17	29.5	13.4	3.8	4.6	30.5	25	10.9	9.6	17.0	12.1	37.5	5.8
18	34.5	12.4	5.9	4.2	19.5	22	9.2	13.8	15.8	11.2	21	5.8
19	19.5	8.0	9.9	3.95	14.4	22	9.2	17.0	15.8	10.4	18.2	5.8
20	27.5	7.4	5.5	14.5	12.3	26	8.6	22	21	10.2	14.6	7.4
21	14.6	8.3	4.2	18.3	11.2	24	9.4	26	15.8	9.8	13.0	16.7
22	11.2	6.4	3.8	28.5	10.8	26	11.1	26	26.5	23	11.7	18.8
23	12.1	5.5	4.1	33	26.5	26.5	10.0	24.5	29	37	10.4	18.3
24	9.2	5.3	4.4	29	18.2	34.5	10.8	23	22	38.5	10.4	10.6
25	8.1	5.2	4.7	22	17.0	21.5	15.8	22	26	22	12.9	8.0
26	7.4	6.2	4.1	27	18.8	17.0	14.6	21	31	26.5	14.6	10.8
27	7.1	5.8	16.6	34.5	38.5	26.5	15.0	18.2	19.5	30	11.5	7.6
28	6.4	24	34.5	35	33	30.5	11.9	14.1	23	17.0	19.3	6.9
29	6.3	27	22	32	42	19.1	10.6	-	25.5	13.7	17.0	18.5
30	6.9	11.2	20	34	37	12.0	9.6	-	29	22	11.2	13.8
31	13.9	8.1	-	31	-	11.6	11.8	-	21	-	9.6	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	34.5	6.3	15.2	23.5	472	1,450
August	30	4.8	10.5	16.2	324	995
September	34.5	3.8	7.84	12.1	235	722
October	35	3.95	16.8	26.0	520	1,600
November	44	10.8	24.0	37.1	720	2,210
December	36	11.6	23.4	36.2	726	2,230
Calendar year 1948	55	3.8	17.1	26.5	6,260	19,230
January	46	8.6	15.2	23.5	472	1,450
February	26	7.1	17.1	26.5	480	1,470
March	40	15.8	22.7	35.1	705	2,160
April	38.5	9.8	19.0	29.4	572	1,750
May	37.5	7.6	13.1	20.3	406	1,250
June	18.8	5.8	8.98	13.9	269	826
Fiscal year 1948-49	46	3.8	16.2	25.1	5,900	18,110

Waiahulu Stream near Waimea

Location.--Lat. 22°04'45", long. 159°39'15", in Waimea Canyon, half a mile upstream from confluence with Koaie Stream and 8¾ miles north of Waimea. Altitude of gage, 890 feet (by barometer).

Drainage area.--20.0 square miles.

Records available.--February to October 1916, October 1917 to June 1918, May 1925 to June 1949.

Average discharge.--23 years (1925-48), 29.0 million gallons a day (44.9 second-feet).

Extremes.--Maximum discharge during year, 16,000 million gallons a day (24,800 second-feet) Feb. 7 (gage height, 17.0 feet, from floodmark), from rating curve extended above 400 million gallons a day; minimum not determined.
1916, 1917-18, 1925-49: Maximum discharge, that of Feb. 7, 1949; minimum, 5.2 million gallons a day (8.0 second-feet) Nov. 4, 1927.

Remarks.--Records good below 200 million gallons a day, fair above. Kokee ditch diverts water above station for irrigation near Kekaha.

Revisions (fiscal year).--W 1095: 1928(M).

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.8	11.9	11.1	14.5	25.5	278	44					
2	11.6	11.6	10.8	16.5	19.3	61	35					
3	11.6	12.2	10.5	15.1	52	26.5	24					
4	12.2	12.5	11.4	13.0	18.5	25	16.5					
5	14.8	13.8	10.8	11.4	13.8	25	18.3					
6	36	15.1	10.5	12.5	12.2	26	154					
7	27	12.2	10.5	11.1	53	17.3	45					
8	16.5	11.6	10.5	10.5	50	21.5	315					
9	14.5	11.4	10.8	10.2	16.6	451	118					
10	12.5	11.1	10.5	10.0	13.1	238	179					
11	11.6	11.1	10.2	9.7	63	83	67					
12	15.8	11.1	10.2	9.7	36.5	73	56					
13	16.2	35.5	10.2	9.7	21.5	149	58					
14	12.5	15.8	10.2	10.5	15.5	53	73					
15	41	11.6	10.0	10.0	14.1	49	389					
16	29	28	10.0	10.0	15.1	26	801					
17	43	23	10.0	9.7	43	31.5	660					
18	38	13.4	10.0	9.7	16.8	25	609					
19	16.9	11.4	10.2	9.5	12.2	18.4	691					
20	24	11.1	10.2	17.5	11.4	49	858					
21	14.5	10.8	10.0	22.5	10.8	58	290					
22	12.2	10.8	10.0	53	10.5	55	167					
23	11.9	10.8	10.0	69	25.5	56	122					
24	11.6	10.8	10.0	24.5	15.1	216	98					
25	11.6	11.1	10.0	16.5	15.5	71	78					
26	11.4	13.7	10.0	20	16.8	39.5	73					
27	11.4	11.6	40	52	108	28.5	210					
28	11.4	30	108	81	79	39.5	89					
29	11.1	31.5	21.5	28.5	124	153	56					
30	11.1	13.8	14.1	57	74	225	47					
31	11.9	11.9	-	53	-	71	45					

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	43	11.1	17.7	27.4	548	1,680
August	35.5	10.8	14.9	23.1	462	1,420
September	108	10.0	15.1	23.4	452	1,390
October	81	9.5	22.8	35.3	708	2,170
November	124	10.5	33.4	51.7	1,000	3,080
December	451	17.3	88.3	137	2,740	8,400
Calendar year 1948	1,370	9.5	55.4	85.7	20,290	62,290
January	858	16.5	209	323	6,490	19,900
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	-	-	-	-	-	-
May	-	-	-	-	-	-
June	-	-	-	-	-	-
Fiscal year	-	-	-	-	-	-

Peak discharge (base, 1,200 m.g.d.).--Dec. 9 (7:30 a.m.) 1,260 m.g.d. (1,950 sec.-ft.); Jan. 16 (4:30 p.m.) 1,800 m.g.d. (2,790 sec.-ft.); Jan. 20 (6 a.m.) 1,990 m.g.d. (3,080 sec.-ft.; Feb. 7 (time unknown) 16,000 m.g.d. (24,800 sec.-ft.).
Note.--Recorder and shelter destroyed by flood Feb. 7. Daily discharge not computed Feb. 1 to June 30.

Kekaha ditch at camp 1, near Waimea

Location.--Lat. 22°02'35", long. 159°38'30", in Waimea Canyon, a quarter of a mile downstream from lower intake and 6¼ miles northeast of Waimea. Altitude of gage, 520 feet (by barometer).

Records available.--November 1907 to June 1949.

Average discharge.--30 years (1918-24, 1925-49), 35.8 million gallons a day (55.4 second-feet).

Extremes.--Maximum discharge recorded during year, 66 million gallons a day (102 second-feet) May 16 (gage height, 4.26 feet); no flow at times.
1907-49: Maximum discharge, 71 million gallons a day (110 second-feet) Apr. 25, 1928 (gage height, 4.33 feet); no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts water from Waiahulu Stream and Koaie River, 3 miles above lower intake, for hydroelectric plant. Lower intake is on Waimea River, 300 feet downstream from powerhouse and 1 mile downstream from confluence with Waialae River. Water used for irrigation in vicinity of Kekaha.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	37.5	33			42	34			0	36.5	39	29.5
2	33	31		34	37.5	25			0	24	31.5	27
3	37.5	29			47	25			0	31.5	25	27
4	35.5	29		42	47	27			0	29.5	23	27
5	40	40		42	44	27			0	27	22	27
			29									
6	49	44		44	37.5	27			0	25	21	26
7	49	33		33	40	29			0	25	21	26
8	47	29		31	29	29			0	24	21	25
9	47	27		27	25	29			0	23	19.8	25
10	40	27		27	40	22	.36		0	23	19.8	25
11	33	29		25	42	21			0	44	19.8	25
12	37.5	37.5		25	42	23			0	44	18.9	26
13	47	47		25	31	29			0	34	21	26
14	35.5	42		27	29	33			0	29.5	22	26
15	37.5	33		25	44	37.5			0	29.5	23	25
16	49	42		25	44	37.5			0	26	32	25
17	44	47		25	31	25			0	24	30.5	24
18	42	42		31	31				0	23	29.5	24
19	47	38	24	27	31		0		0	22	19.8	24
20	47			35.5	31		0		0	24	17.1	27
21	42			44	31		0		0	24	16.2	34.5
22	37.5			44	35.5		0		0	32	15.4	48
23	40			42	44		0		0	41	24	48
24	33			42	42	33	0		0	39	31.5	39
25	31	33		47	37.5		0		0	41	31.5	29.5
26	29			47	44		0		4.1	34	31.5	29.5
27	29			47	40		0		11.0	37.5	31.5	28
28	27		36	47	37.5		0		24	25	34	26
29	27			49	42		0		29.5	23	31.5	36.5
30	27			44	42		0		36.5	27	31.5	48
31	31		-	44	-		0		36.5	-	29.5	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	49	27	38.3	59.3	1,190	3,650
August	-	-	34.7	53.7	1,080	3,300
September	-	-	27.3	42.2	818	2,510
October	49	25	36.0	55.7	1,120	3,420
November	47	25	38.0	58.8	1,140	3,500
December	-	-	30.4	47.0	942	2,890
Calendar year 1948	-	0	37.5	58.0	13,720	42,110
January	-	0	20.9	32.3	648	1,990
February	0	0	0	0	0	0
March	36.5	0	4.57	7.07	142	435
April	44	22	29.7	46.0	892	2,740
May	39	15.4	25.3	39.1	785	2,410
June	48	24	29.4	45.5	884	2,710
Fiscal year 1948-49	-	0	26.4	40.8	9,640	29,560

Note.--No gage-height record Aug. 20 to Oct. 3, Dec. 18 to Jan. 31; discharge computed on basis of ditchman's notes, recorded range in stage, and records for Waimea River below Kekaha ditch intake.

Makaweli River near Waimea

Location.--Lat. 21°58'15", long. 159°38'55", 0.7 mile upstream from confluence with Waimea River, 1.9 miles northeast of Waimea, and 3.8 miles northwest of Makaweli. Altitude of gage, 30 feet (hand levels from estuary at confluence with Waimea River).

Drainage area.--25.0 square miles.

Records available.--July 1943 to June 1949. October 1911 to June 1917, staff gage at site 0.2 mile downstream.

Extremes.--Maximum discharge during year, 7,700 million gallons a day (11,900 second-feet) Feb. 7 (gage height, 10.66 feet), from rating curve extended above 150 million gallons a day on basis of slope-area determination at gage height 9.46 feet; minimum, 4.6 million gallons a day (7.1 second-feet) Sept. 17 (gage height, 1.20 feet).
1943-49: Maximum discharge, that of Feb. 7, 1949; minimum, 3.4 million gallons a day (5.8 second-feet) Oct. 21-24, 1944.

Remarks.--Records poor.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.6	7.6	8.0	6.8	21	659	65	31	128			
2	26.5	6.3	7.0	7.6	12.5	142	83	29.5				
3	78	6.0	42	8.1	45	80	68	29	a80			
4	42	37	9.2	9.2	18.5	109	28.5	28				
5	43	81	6.3	56	12.9	138	52	28.5				
										a30		
6	35	11.9	53	23	9.6	104	143	75				
7	18.8	14.7	135	9.2	42	65	65	2,530			a15	
8	35.5	6.5	29	7.6	29	70	365	1,080				
9	24.5	6.0	9.6	6.8	12.9	206	514	822				
10	15.9	14.7	7.6	6.3	10.6	365	136	283				a15
11	8.9	34.5	6.5	6.0	36.5	144	90	160				
12	9.7	40	7.3	5.8	162	108	69	121				
13	20.5	174	7.6	7.2	76	162	124	a150	a35			
14	8.6	17.1	6.0	6.5	22	140	119	a100				
15	88	12.2	5.6	6.8	21.5	179	379	a130			a110	
16	55	117	5.3	6.8	15.6	71	943	a110				
17	53	30.5	5.1	22.5	84	133	747	a90				
18	36	47	5.3	9.9	21.5	95	773	a70				
19	16.5	17.7	5.3	6.5	13.2	78	782	a60			36	
20	14.5	56	6.9	13.7	11.3	148	1,250	a50			22.5	
										a25		
21	12.9	15.5	6.0	17.6	10.2	166	286	a45			18.5	
22	12.0	8.0	7.9	15.6	38	127	188	42				
23	12.0	6.5	14.5	70	85	87	128	36				
24	7.6	16.3	41	22	83	187	102	29.5				
25	6.8	26.5	16.5	16.3	59	120	90	27				a40
26	6.3	15.3	8.3	14.6	205	74	102	24.5	a140		a20	
27	6.3	9.2	40	20	132	92	114	26.5				
28	6.3	259	72	69	71	116	80	35				
29	6.3	72	14.9	44	79	114	57	-				
30	6.8	22.5	8.3	135	75	135	42	-				
31	9.4	9.6	-	64	-	74	34.5	-		-		-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	88	6.3	23.7	36.7	733	2,250
August	259	6.0	38.6	59.7	1,200	3,680
September	135	5.1	19.9	30.8	597	1,830
October	135	5.8	23.2	35.9	720	2,210
November	205	9.6	50.5	78.1	1,510	4,650
December	659	65	145	224	4,490	13,770
Calendar year 1948	659	5.1	54.5	84.3	19,960	61,260
January	1,250	28.5	259	401	8,020	24,610
February	2,530	24.5	223	345	6,240	19,160
March	-	-	76.2	118	2,360	7,250
April	-	-	26.7	41.3	800	2,460
May	-	-	33.0	51.1	1,020	3,140
June	-	-	23.3	36.1	700	2,150
Fiscal year 1948-49	2,530	5.1	77.8	120	28,390	87,160

Peak discharge (base, 1,300 m.g.d.).--Dec. 1 (9:30 a.m.) 2,970 m.g.d. (4,600 sec.-ft.; Jan. 9 (3 a.m.) 1,720 m.g.d. (2,660 sec.-ft.); Jan. 20 (7 a.m.) 4,300 m.g.d. (6,650 sec.-ft.); Feb. 7 (1 p.m.) 7,700 m.g.d. (11,900 sec.-ft.).
a No gage-height record; discharge computed on basis of records for nearby streams.

Hanapepe River at Koula, near Eleele

Location.--Lat. 21°57'20", long. 159°33'15", just downstream from confluence with Manuahi Stream and 4 miles northeast of Eleele. Altitude of gage, 150 feet (by barometer).

Drainage area.--18.8 square miles.

Records available.--May 1917 to January 1921, December 1926 to June 1949. August 1910 to December 1916 at site half a mile upstream; records not equivalent.

Average discharge.--25 years (1917-20, 1927-49), 56.3 million gallons a day (87.1 second-feet).

Extremes.--Maximum discharge during year, 4,790 million gallons a day (7,410 second-feet) Feb. 7 (gage height, 7.90 feet), from rating curve extended above 2,400 million gallons a day by test on model of station site; minimum, 17.0 million gallons a day (26.3 second-feet) June 3, 4.

1910-21, 1926-49: Maximum discharge, 6,000 million gallons a day (9,280 second-feet) Mar. 20, 1948 (gage height, 9.05 feet), from rating curve extended above 2,400 million gallons a day by test on model of station site; minimum, 6.2 million gallons a day (9.6 second-feet) Oct. 4, 5, 1939.

Remarks.--Records good. Hanapepe ditch diverts water from river 3 miles above station for irrigation in vicinity of Makaweli.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 7

-0.2	21.5	0.8	105	3.0	710
0.0	32	1.2	167	3.5	960
.2	44	1.6	255	4.0	1,260
.4	59	2.0	360	4.5	1,560
.6	80	2.5	520		

Feb. 8 to June 30

0.0	18.5	0.8	92
.2	31	1.2	158
.4	48	1.6	250
.6	69	2.0	360

Note.--Same as preceding table above 1.90 feet.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	41	28	42	30.5	40	564	71	53	190	59	36.5	22.5
2	59	27	39	31	37	131	178	51	140	49	29	19.7
3	120	26.5	67	32	63	74	127	50	111	45	28	18.0
4	74	60	36	32	41	95	76	51	60	41	27	18.5
5	66	132	35	87	37.5	138	81	51	51	36.5	26	21.5
6	73	31	103	43	32	121	183	88	48	36	26	21
7	51	46	252	35	82	76	150	1,640	73	34	31	19.1
8	80	29	70	31	55	74	450	708	88	34	26.5	19.1
9	66	30	44	29	35.5	252	349	510	53	32.5	26	19.1
10	48	43	38.5	30	31.5	469	99	226	46	40	25	18.5
11	40	63	36	28.5	59	182	69	114	45	44	23.5	20.5
12	54	91	38	27.5	142	119	62	86	51	47	18.5	22
13	50	314	42	28.5	120	247	146	156	54	32.5	39.5	22.5
14	37	54	33	26.5	48	147	93	85	40	44	54	22
15	127	43	33	25.5	49	228	350	142	39	36.5	25	21.5
16	75	121	31	26	45	92	860	113	35	30.5	69	26
17	120	64	33	39.5	195	261	625	74	34	29.5	381	21
18	67	87	30	29	50	124	724	66	33.5	31	57	20.5
19	46	60	30	26	39	107	803	61	50	33.5	31	20.5
20	40	127	32.5	34.5	36	264	1,070	58	61	41	24.5	25
21	39	50	28	27	34.5	325	271	55	36.5	29	22.5	66
22	39	42	40	52	78	218	190	51	267	37	21.5	65
23	34	38	48	52	117	153	130	51	115	40	21.5	66
24	31.5	96	64	35.5	114	182	105	49	121	60	25	26
25	30	129	55	38	95	140	92	48	210	29.5	23.5	24
26	29	154	36.5	38	402	108	114	48	141	29	22.5	24
27	31	95	70	40	191	119	87	50	103	28	23.5	19.7
28	30.5	503	88	97	92	137	62	60	330	26.5	47	24.5
29	28	131	38	58	68	119	57	-	111	26.5	33.5	77
30	29.5	68	32	135	64	152	55	-	103	37	26.5	73
31	33	48	-	73	-	86	55	-	120	-	25	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	127	28	54.5	84.3	1,690	5,180
August	503	26.5	91.3	141	2,830	8,690
September	252	28	52.2	80.8	1,560	4,800
October	135	25.5	42.5	65.8	1,320	4,040
November	402	31.5	83.1	129	2,490	7,650
December	564	74	178	275	5,500	16,890
Calendar year 1948	591	9.9	81.8	127	29,950	91,930
January	1,070	55	251	388	7,780	23,890
February	1,640	48	171	265	4,800	14,720
March	330	33.5	95.5	148	2,960	9,080
April	60	26.5	37.3	57.7	1,120	3,430
May	381	18.5	41.8	64.7	1,300	3,980
June	77	18.0	29.5	45.6	884	2,710
Fiscal year 1948-49	1,640	18.0	93.8	145	34,230	105,100

Peak discharge (base, 2,300 m.g.d.).--Dec. 1 (10:30 a.m.) 3,030 m.g.d. (4,690 sec.-ft.); Jan. 20 (6:30 a.m.) 3,830 m.g.d. (5,930 sec.-ft.); Feb. 7 (1:30 p.m.) 4,790 m.g.d. (7,410 sec.-ft.).

Hanapepe ditch at Koula, near Eleele

Location.--Lat. 21°57'10", long. 159°33'00", at first flume downstream from siphon at Koula, 3 miles downstream from intake and 4 miles northeast of Eleele. Altitude of gage, 490 feet (by barometer).

Records available.--January 1910 to June 1921, March 1927 to April 1949 (discontinued).

Average discharge.--31 years (1910-20, 1927-48), 24.7 million gallons a day (38.2 second-feet).

Extremes.--Maximum discharge during period July 1948 to March 1949, 27 million gallons a day (42 second-feet) Aug. 28 (gage height, 2.80 feet); no flow for many days. 1910-21, 1927-49: Maximum discharge, 42 million gallons a day (65 second-feet) Apr. 9, 1945 (gage height, 3.36 feet); no flow at times.

Remarks.--Records good. Ditch diverted water from Hanapepe River 3 miles above station for irrigation in vicinity of Makaweli.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21.5	14.3	16.5	14.3	13.3	16.5	17.0	11.8	16.5	13.9		
2	20	12.8	17.0	14.3	12.4	5.3	19.7	12.8	16.5	17.6		
3	21.5	12.8	20	14.3	14.3	0	17.6	13.3	16.5	16.5		
4	18.8	16.5	17.6	12.0	12.8	8.3	17.6	5.2	15.4	13.9		
5	17.6	20	15.4	14.5	12.3	17.6	18.1	0	14.3	5.2		
6	18.2	18.8	16.9	14.3	11.3	17.6	17.6	0	12.8	-		
7	17.6	18.8	21.5	13.3	12.2	17.6	13.8	4.8	14.1	-		
8	17.6	14.5	20	11.8	13.8	17.6	8.1	0	15.4	-		
9	16.5	13.4	17.6	10.8	12.3	19.7	0	0	14.3	-		
10	15.4	15.4	16.5	11.3	11.3	21.5	0	0	14.2	-		
11	14.3	15.4	15.4	11.3	18.4	21.5	0	9.6	11.8	-		
12	14.2	17.6	15.4	10.8	15.6	20	0	15.4	13.3	-		
13	15.4	22	15.4	10.8	15.4	21.5	11.6	16.5	14.3	-		
14	14.3	17.0	14.3	10.4	13.0	20	17.6	16.5	13.3	-		
15	16.6	13.7	12.8	10.0	17.6	23	20	17.6	14.3	-		
16	17.6	21	13.6	10.0	17.6	21.5	19.2	17.6	15.4	-		
17	18.5	20	14.6	11.1	11.3	23.5	17.5	15.4	15.4	-		
18	16.5	20	14.3	10.4	15.4	21.5	17.0	14.3	15.4	-		
19	16.6	18.4	12.8	10.0	14.3	18.8	5.4	12.8	16.5	-		
20	16.5	19.6	13.6	11.5	13.3	21	1.2	11.8	17.6	-		
21	16.5	17.6	13.3	11.8	12.3	23	0	11.3	16.5	-		
22	16.5	15.4	13.6	12.1	13.5	16.8	0	11.8	20	-		
23	16.5	14.3	16.5	13.3	16.0	19.2	0	12.3	19.4	-		
24	15.4	16.4	17.6	12.3	15.4	21.5	0	12.3	20.5	-		
25	14.3	18.8	17.0	12.3	14.3	20	0	11.8	23	-		
26	14.3	19.2	16.5	12.3	18.4	17.0	0	11.8	13.3	-		
27	14.3	19.0	16.8	12.8	17.6	17.6	8.0	12.3	0	-		
28	14.3	25	18.8	16.3	14.3	20	15.4	13.2	0	-		
29	14.3	21.5	17.6	15.4	14.3	20	14.3	-	0	-		
30	15.4	20	15.4	17.6	13.3	20	13.3	-	4.7	-		
31	14.3	17.6	-	16.2	-	18.8	11.8	-	7.1	-		

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21.5	14.2	16.5	25.5	511	1,570
August	25.0	12.8	17.6	27.2	547	1,680
September	21.5	12.8	16.1	24.9	484	1,490
October	17.6	10.0	12.6	19.5	390	1,200
November	18.4	11.3	14.2	22.0	427	1,310
December	23.5	0	18.3	28.3	568	1,740
Calendar year 1948	29	0	17.6	27.2	6,450	19,790
January	20.0	0	9.74	15.1	302	926
February	17.6	0	10.4	16.1	292	897
March	23.0	0	13.6	21.0	422	1,290
April 1-5	17.6	5.2	13.4	20.7	67.1	206
May	-	-	-	-	-	-
June	-	-	-	-	-	-
The period	-	-	-	-	-	12,310

South Fork Wailua River near Lihue

Location.--Lat. 22°02'10", long. 159°22'55", a third of a mile upstream from Wailua Falls and 5 miles north of Lihue. Altitude of gage, 230 feet (by barometer).
Drainage area.--22.4 square miles.
Records available.--December 1911 to June 1949. December 1911 to November 1918 at site a third of a mile upstream.
Average discharge.--27 years (1921-24, 1925-49), 67.7 million gallons a day (105 second-feet).
Extremes.--Maximum discharge during year, 7,000 million gallons a day (10,800 second-feet) Feb. 7 (gage height, 8.99 feet), from rating curve extended above 1,550 million gallons a day by test on model of station site; minimum, 2.81 million gallons a day (4.35 second-feet) June 27.
1911-49: Maximum discharge, 29,000 million gallons a day (44,900 second-feet) Jan. 16, 1920 (gage height, 11.25 feet), from rating curve extended above 9,000 million gallons a day; minimum, 1.15 million gallons a day (1.78 second-feet) June 9-11, 1947.
Remarks.--Records excellent below 300 million gallons a day, good above. Lihue and Hanamaulu ditches divert water above station at altitudes of 600 and 500 feet, respectively, for irrigation in the vicinity of Lihue.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 7

0.9	2.65	1.8	29.6	4.0	640
1.0	3.8	2.0	44.2	4.5	950
1.1	5.2	2.3	77.4	5.0	1,340
1.2	6.9	2.6	125	5.5	1,800
1.4	11.5	3.0	225		
1.6	18.9	3.5	395		

Feb. 8 to June 30

0.8	3.03	1.2	7.45
.9	3.88	1.4	11.6
1.0	4.88	1.6	18.9
1.1	6.05		

Note.--Same as preceding table above 1.5 feet.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	26.5	6.0	98	10.0	21.5	513	140	69	246	72	6.9	4.7
2	73	3.1	87	44	29.5	177	286	68	266	58	4.4	4.1
3	150	5.3	124	47	25.5	102	205	65	189	55	4.2	3.8
4	112	36.5	82	26.5	6.5	117	116	70	87	29.5	3.9	3.7
5	85	344	74	26	4.5	179	116	57	67	8.3	3.7	3.6
6	40	19.2	89	15.0	4.4	136	291	142	59	7.3	3.6	3.55
7	22	24	217	7.1	48	102	119	2,270	91	6.5	3.6	3.3
8	47	30.5	37.5	6.6	98	131	913	1,360	113	6.2	3.55	3.35
9	82	17.8	14.2	14.0	47	272	965	941	67	5.8	3.45	3.1
10	82	9.6	8.3	22	36.5	469	230	355	43	6.0	3.2	2.95
11	52	7.3	7.7	12.5	127	232	136	187	25.5	12.7	3.2	3.1
12	139	32	19.0	4.9	94	163	140	131	30	21.5	3.1	3.8
13	258	355	22	5.1	148	246	196	205	108	7.3	6.0	4.0
14	37	47	6.6	5.1	64	178	137	114	31.5	6.5	19.5	3.6
15	74	56	6.0	5.1	58	319	374	196	9.9	14.2	5.5	3.9
16	65	477	5.4	4.9	51	144	1,280	170	9.2	23.5	20	3.85
17	100	550	5.7	17.8	475	286	810	101	7.8	51	451	3.9
18	62	311	5.5	15.8	114	153	988	82	7.4	33.5	34	3.1
19	26	147	4.6	8.2	67	145	1,040	80	12.4	24.5	6.2	3.1
20	9.7	210	4.4	10.8	73	305	1,260	79	66	6.1	4.8	3.2
21	11.3	111	4.9	15.1	57	375	438	71	22.5	5.4	4.6	3.3
22	9.2	99	5.0	6.1	115	280	308	61	130	5.0	16.4	24
23	18.8	63	32	37.5	147	170	225	64	64	17.4	10.6	27
24	34.5	292	62	29.5	132	224	170	62	74	66	4.2	4.2
25	29.5	754	43	19.5	121	209	142	54	193	7.7	3.9	3.9
26	15.3	712	40	5.7	462	190	164	50	140	5.7	3.6	3.2
27	4.8	317	78	6.2	247	189	159	64	91	4.8	26.5	2.9
28	4.1	797	131	79	136	252	79	37.5	222	4.4	63	3.05
29	4.6	316	29	15.5	118	209	47	-	105	4.2	60	16.4
30	3.8	165	12.8	107	266	215	64	-	148	4.2	10.1	15.1
31	3.7	111	-	58	-	153	53	-	74	-	6.0	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	258	3.7	54.3	84.0	1,680	5,160
August	797	3.1	207	320	6,430	19,720
September	217	4.4	45.2	69.9	1,360	4,160
October	107	4.9	22.2	34.3	688	2,110
November	475	4.4	113	175	3,390	10,410
December	513	102	220	340	6,840	20,980
Calendar year 1948	797	2.9	106	164	38,970	119,600
January	1,280	47	374	579	11,590	35,570
February	2,270	37.5	257	398	7,210	22,110
March	266	7.4	90.3	140	2,800	8,590
April	72	4.2	19.3	29.9	580	1,780
May	451	3.1	25.9	40.1	803	2,460
June	27	2.9	5.82	9.00	175	536
Fiscal year 1948-49	2,270	2.9	119	184	43,550	133,600

Peak discharge (base, 2,900 m.g.d.).--Jan. 9 (8:30 a.m.) 3,020 m.g.d. (4,670 sec.-ft.); Jan. 20 (8:30 a.m.) 3,430 m.g.d. (5,310 sec.-ft.); Feb. 7 (2 p.m.) 7,000 m.g.d. (10,800 sec.-ft.).

North Fork Wailua River at altitude 650 feet, near Lihue

Location.--Lat. 22°03'50", long. 159°26'20", 1½ miles upstream from intake of Kanaha ditch and 7¾ miles northwest of Lihue. Altitude of gage, 650 feet (from topographic map).

Drainage area.--6.6 square miles.

Records available (corrected).--September 1914 to June 1949.

Average discharge.--28 years (1921-49), 50.5 million gallons a day (78.1 second-feet).

Extremes.--Maximum discharge during year, 2,060 million gallons a day (3,190 second-feet) Feb. 7 (gage height, 9.12 feet), from rating curve extended above 600 million gallons a day by test on model of station site; minimum, 0.53 million gallons a day (0.82 second-foot) May 9.

1914-49: Maximum discharge, 4,020 million gallons a day (6,220 second-feet) June 2, 1943 (gage height, 9.96 feet, datum then in use), from rating curve extended above 600 million gallons a day by test on model of station site; minimum, 0.3 million gallons a day (0.5 second-foot) Feb. 19, 20, Oct. 13-15, 1945.

Remarks.--Records good. Since 1925 Hanalei tunnel has discharged its water into river, and North Wailua and Stable storm ditches have diverted water above station for irrigation in vicinity of Lihue.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 21 to Feb. 6)

July 1 to Feb. 6

1.2	1.9	2.0	20.5	3.8	178
1.3	3.1	2.3	34	4.2	242
1.4	4.5	2.6	51	4.6	326
1.6	8.3	3.0	83	5.0	436
1.8	13.6	3.4	125		

Feb. 7 to June 30

1.4	0.64	2.2	20.3	4.2	242
1.5	1.36	2.4	31.3	4.6	326
1.6	2.53	2.7	53	5.0	436
1.7	4.15	3.0	81	5.5	594
1.8	6.24	3.4	125		
2.0	12.0	3.8	177		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	65	29.5	55	45	42	235	66	16.6	95	24	1.17	32.5
2	98	13.1	51	45	42	97	112	16.6	84	19.5	.57	26.5
3	97	7.8	81	42	51	74	87	16.5	61	18.0	.57	26
4	73	61	42	41	48	83	62	14.6	32.5	15.8	.57	26
5	58	193	39	70	42	91	80	14.4	26	15.4	.57	25.5
6	58	53	54	39	39	79	94	29	23.5	14.3	.57	9.2
7	51	60	136	33.5	67	66	118	688	55	5.8	4.1	1.00
8	63	39	53	31.5	50	62	242	555	38	1.00	.57	.86
9	76	36.5	39	29	39	124	173	219	24	.86	2.15	.86
10	51	44	34	28.5	42	164	89	100	21	2.55	3.95	.78
11	45	76	30	27.5	67	92	70	66	17.6	2.05	1.35	3.8
12	88	63	30	11.8	88	88	62	55	50	6.5	.57	1.00
13	96	150	28.5	4.6	81	95	91	76	31.5	.86	26.5	6.3
14	58	51	21.5	2.4	51	100	62	55	18.5	11.5	23	2.4
15	95	50	9.8	2.3	51	127	110	55	16.7	15.4	1.36	3.55
16	66	211	9.6	11.7	51	70	340	49	15.0	4.7	29	18.7
17	66	254	9.0	30	110	100	313	38	6.3	7.4	290	1.48
18	54	210	8.8	14.6	58	78	404	33	1.22	7.5	55	1.31
19	48	102	8.6	7.5	60	78	304	32	14.9	1.03	40	.86
20	45	103	8.8	23.5	48	122	344	29.5	33.5	1.01	31.5	26.5
21	50	63	5.4	12.5	45	125	120	23	8.3	.64	28.5	46
22	53	48	34	23.5	77	92	63	18.5	61	13.7	30	40
23	42	45	21	24.5	87	83	34	19.0	37.5	17.7	26	44
24	39	206	62	22.5	79	96	25.5	15.8	38.5	50	25.5	27
25	33	275	68	34	69	96	36.5	15.0	52	14.7	12.5	37
26	32.5	236	53	41	174	74	65	20.5	42	4.5	20.5	32
27	34	136	86	45	128	91	92	18.7	29	.64	16.1	9.1
28	18.9	320	99	75	91	105	36.5	28	53	.57	74	5.7
29	9.5	117	63	58	94	89	28	-	41	.57	58	26
30	21	83	48	77	111	95	22	-	51	1.91	44	56
31	32.5	62	-	54	-	74	18.3	-	23	-	38	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	98	9.5	55.4	85.7	1,720	5,270
August	320	7.8	110	170	3,400	10,430
September	136	5.4	42.9	66.4	1,290	3,950
October	77	2.3	32.5	50.3	1,010	3,090
November	174	39	69.4	107	2,080	6,390
December	235	62	98.2	152	3,040	9,340
Calendar year 1948	336	.9	63.4	98.1	23,210	71,220
January	404	18.3	121	187	3,760	11,550
February	688	14.4	82.7	128	2,320	7,110
March	95	1.22	35.5	54.9	1,100	3,380
April	50	.57	9.34	14.5	280	860
May	290	.57	28.6	44.3	886	2,720
June	56	.78	17.9	27.7	538	1,650
Fiscal year 1948-49	688	.57	58.7	90.8	21,420	65,740

Peak discharge (base, 1,200 m.g.d.).--Aug. 17 (3 p.m.) 1,800 m.g.d. (2,790 sec.-ft.); Dec. 1 (11 a.m.) 1,210 m.g.d. (1,870 sec.-ft.); Jan. 8 (6 p.m.) 1,370 m.g.d. (2,120 sec.-ft.); Jan. 18 (1:30 p.m.) 1,800 m.g.d. (2,790 sec.-ft.); Feb. 7 (12:30 p.m.) 2,060 m.g.d. (3,190 sec.-ft.).

Hanalei tunnel outlet near Lihue

Location.--Sharp-crested brass weir, lat. 22°05'00", long. 159°28'15", at end of Hanalei tunnel, 2¼ miles downstream from intake on Kaapoko Stream and 9⅝ miles northwest of Lihue. Altitude of gage, 1,210 feet (Lihue Plantation Co. levels).

Records available.--July 1932 to June 1949.

Average discharge.--17 years, 24.0 million gallons a day (37.1 second-feet).

Extremes.--Maximum discharge during year, 61 million gallons a day (94 second-feet) Aug. 17 (gage height, 1.55 feet); no flow May 11.
1932-49: Maximum discharge, 79 million gallons a day (122 second-feet) Jan. 4, 1943 (gage height, 1.85 feet); no flow at times.

Remarks.--Records good. Tunnel diverts water from Kaapoko Stream and Hanalei River and empties it into north branch of North Fork Wailua River, from which it is later diverted and used for irrigation in vicinity of Lihue and Kapaa.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	30	21.5	18.2	22	26	42	32	0.21	1.74	0.60	0.36	15.3
2	36.5	21	16.4	22	26	36.5	36.5	.17	1.51	.60	.26	14.9
3	39	21.5	23	22	29	34.5	33.5	.17	1.02	.47	.26	14.9
4	34.5	35	15.6	20.5	27	36.5	29.5	.17	.60	.36	.26	14.9
5	31.5	37.5	15.3	30.5	24.5	36.5	32	.09	.47	.36	.36	14.5
6	32	27.5	17.3	21	22.5	34.5	34.5	.26	.47	.36	.26	14.2
7	29.5	30	30	19.5	28.5	32	32	26	1.33	.36	.36	14.2
8	34.5	23.5	17.6	18.0	28	33	39	12.4	1.02	.26	.36	14.2
9	34.5	23.5	15.6	16.8	23.5	39	36.5	4.6	.73	.26	6.8	14.2
10	28.5	26.5	14.9	16.8	27.5	42	32	2.05	.60	.26	16.8	13.8
11	26.5	33.5	14.9	16.4	34.5	36.5	30.5	1.18	.60	.36	11.7	15.6
12	34.5	33	15.3	16.4	39	36.5	28	.87	1.11	.46	13.1	14.2
13	34.5	39	14.5	18.7	36.5	39	31	1.18	.87	.26	17.1	14.5
14	28	28.5	14.2	16.4	30	36.5	27.5	.73	.73	.36	16.0	14.2
15	36	27	14.2	18.0	30.5	39	34.5	.73	.60	.36	13.1	14.9
16	31.5	36	14.2	26.5	30.5	34.5	42	.86	.48	.26	16.8	16.8
17	34.5	40	14.2	32	34	36.5	44	.73	.36	.26	24.5	14.2
18	30.5	37.5	14.2	26.5	28.5	34.5	36	.60	.36	.36	13.7	14.9
19	28.5	25.5	14.2	22.5	29	34.5	8.6	.60	.60	.36	12.3	14.2
20	27	25.5	16.7	31	27	36.5	10.7	.47	.60	.31	12.0	19.5
21	27.5	19.4	16.0	27	25	39	3.3	.47	.36	.26	12.0	22.5
22	30.5	18.0	23.5	34.5	34	36.5	1.69	.47	1.56	.70	12.7	21
23	26	16.8	22.5	32	34	34.5	1.34	.47	.92	.73	12.0	19.6
24	24	30	27.5	31.5	36	39	1.02	.47	.73	1.18	11.7	16.4
25	23	37.5	26.5	29	34.5	36.5	.87	.36	.87	.60	13.1	18.9
26	22.5	32.5	24	29.5	42	34.5	1.27	.47	.87	.47	15.2	18.0
27	24	26	31.5	31.5	39	35.5	2.65	.47	.60	.36	14.2	16.0
28	22.5	41	33	34.5	36.5	36.5	1.18	.60	.87	.36	21.5	17.2
29	23	23.5	26	34.5	36.5	36.5	.73	-	.73	.36	18.7	19.9
30	23.5	19.7	23.5	34.5	36.5	36.5	.36	-	.73	.26	16.8	21
31	23.5	17.2	-	31	-	34.5	.36	-	.73	-	16.0	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	39	22.5	29.4	45.5	912	2,800
August	41	16.8	28.2	43.6	875	2,680
September	33	14.2	19.5	30.2	584	1,790
October	34.5	16.4	25.3	39.1	783	2,400
November	42	22.5	31.2	48.3	936	2,870
December	42	32	36.5	56.5	1,130	3,470
Calendar year 1948	44	0	19.9	30.8	7,280	22,320
January	44	.36	20.8	32.2	645	1,980
February	26	.09	2.07	3.20	57.8	178
March	1.74	.36	.799	1.24	24.8	76
April	1.18	.26	.417	.645	12.5	38
May	24.5	.26	11.0	17.0	340	1,040
June	22.5	13.8	16.3	25.2	488	1,500
Fiscal year 1948-49	44	.09	18.6	28.8	6,790	20,820

North Wailua ditch near Lihue

Location.--Sharp-crested weir, lat. 22°03'40", long. 159°27'55", 300 feet downstream from intake diversion dam on North Fork Wailua River, 8 miles west of Wailua, and 8½ miles northwest of Lihue. Datum of gage is 1,105.45 feet above mean sea level (Lihue Plantation Co. levels).

Records available.--July 1932 to June 1949. Records from 1926 to June 1932 collected by Lihue Plantation Co.

Average discharge.--17 years, 12.2 million gallons a day (18.9 second-feet).

Extremes.--Maximum discharge during year, 32 million gallons a day (49.5 second-feet) May 16 (gage height, 1.21 feet); no flow at times.
1932-49: Maximum discharge, 59 million gallons a day (91 second-feet) Feb. 25, 1935 (gage height, 1.57 feet, control then in use); no flow at times.

Remarks.--Records good. Water used for power and irrigation in vicinity of Lihue.

Revisions (fiscal years).--W 770: 1932-33.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.08	13.1	6.5	11.3	11.1	3.25	6.5	14.6	5.6	11.9	15.3	12.4
2	2.5	12.5	8.6	11.3	11.3	.36	2.5	14.7	.51	11.9	13.8	14.8
3	6.5	12.8	12.5	11.3	11.9	4.7	.36	14.8	1.64	11.6	14.0	14.7
4	6.0	14.4	11.3	11.3	11.6	7.3	4.4	14.3	6.9	11.6	13.4	14.7
5	10.0	6.5	11.3	12.5	11.3	7.2	4.4	14.3	8.5	11.6	13.1	14.9
6	11.8	10.3	12.3	15.1	11.0	7.2	.36	17.3	10.0	11.3	12.8	13.4
7	11.3	12.2	6.2	15.3	11.8	8.0	5.4	8.3	13.2	11.9	15.2	13.1
8	12.2	11.3	6.0	14.3	11.3	11.9	7.1	1.53	8.2	14.0	13.4	12.9
9	12.5	11.3	11.6	13.7	12.1	7.6	6.8	.67	8.4	13.4	12.8	12.8
10	11.6	11.6	g15.1	13.4	14.6	.65	6.0	1.27	8.8	13.8	12.5	12.5
11	11.3	13.8	g15.3	13.4	16.2	.44	6.0	.46	11.3	11.3	12.5	14.1
12	7.6	17.2	g14.9	13.0	13.3	.44	6.0	.65	14.9	11.6	12.5	12.8
13	.65	4.0	g14.6	13.9	14.3	1.61	4.1	.80	11.9	11.3	14.4	14.9
14	6.5	9.8	g14.3	13.1	13.4	6.8	4.8	.65	11.2	11.9	15.5	13.9
15	5.8	11.6	g14.3	12.8	13.4	7.1	7.0	5.7	11.6	11.3	15.3	15.0
16	2.5	7.8	g14.0	14.4	13.4	6.8	3.1	10.0	11.3	11.0	15.9	16.0
17	6.2	.93	14.0	16.2	8.6	2.5	.73	6.8	13.4	11.0	8.7	14.0
18	6.0	.55	13.4	15.3	6.8	.44	.77	6.8	14.0	12.1	8.5	14.0
19	10.0	.44	13.7	13.7	11.0	3.05	.40	6.8	18.1	14.9	9.6	13.7
20	11.6	.47	14.1	15.4	11.3	.48	.78	6.5	13.3	14.4	14.3	16.6
21	11.6	4.2	13.1	14.3	11.3	.48	.29	12.2	11.3	13.7	16.2	17.7
22	11.9	11.3	13.2	15.6	12.2	.44	.15	14.3	8.7	13.8	16.5	14.6
23	11.3	10.1	14.4	15.3	12.3	.44	.07	14.4	10.5	13.7	14.6	16.2
24	11.9	6.0	12.8	14.9	12.7	.44	0	14.0	12.2	15.8	14.6	16.2
25	13.7	.88	8.7	14.9	12.0	.44	2.15	14.0	12.5	14.8	14.6	18.0
26	13.4	.84	11.1	14.3	9.8	.36	5.8	12.0	12.2	15.3	17.3	17.3
27	14.0	.51	11.6	14.7	.36	.44	3.05	12.6	11.6	14.5	17.4	15.1
28	14.0	.77	6.6	13.1	1.66	.44	6.8	13.0	8.0	14.0	14.5	17.0
29	14.0	.44	6.2	11.9	7.8	.44	8.5	-	5.1	14.0	11.6	18.2
30	14.0	.44	10.0	12.2	7.5	.44	12.0	-	12.6	16.0	11.3	11.1
31	13.7	5.0	-	11.6	-	1.97	14.4	-	11.9	-	11.3	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14.0	0.08	9.55	14.8	296	909
August	17.2	.44	7.20	11.1	223	685
September	15.3	6.0	11.7	18.1	352	1,080
October	16.2	11.3	13.7	21.2	424	1,300
November	16.2	.36	10.9	16.9	327	1,000
December	11.9	.36	3.04	4.70	94.2	289
Calendar year 1948	17.2	.06	9.07	14.0	3,320	10,190
January	14.4	0	4.22	6.53	131	401
February	17.3	.46	9.05	14.0	253	778
March	18.1	.51	10.3	15.9	319	980
April	16.0	11.0	13.0	20.1	389	1,200
May	17.4	8.5	13.7	21.2	423	1,300
June	18.2	11.1	14.8	22.9	443	1,360
Fiscal year 1948-49	18.2	0	10.1	15.6	3,670	11,280

g Discharge computed from graph based on ditchman's notes and recorded range in stage.

Stable storm ditch near Lihue

Location.--Sharp-crested weir, lat. 22°04'00", long. 159°26'45", 100 feet downstream from intake, 7.8 miles northwest of Lihue, and 8.2 miles west of Kapaa. Altitude of gage, 710 feet (by barometer).

Records available.--December 1936 to June 1949. Records for April 1931 to December 1936 collected by Lihue Plantation Co. from staff gage at site 1 mile downstream.

Average discharge.--12 years (1937-49), 6.43 million gallons a day (9.95 second-feet).

Extremes.--Maximum discharge during year, 47 million gallons a day (73 second-feet) May 17 (gage height, 1.77 feet); no flow for many days.
1936-49: Maximum discharge, 185 million gallons a day (286 second-feet) Apr. 1, 1948 (gage height, 3.71 feet); no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts water from North Fork Wailua River for irrigation of sugarcane in vicinity of Lihue.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.02	0	0.02	0	0.07	0.29	0.02	0.07	0	0.07	11.4	0.07
2	.02	15.1	.02	.02	.07	.07	.02	.07	0	.07	7.7	.06
3	.02	22	.02	.02	2.8	.02	.07	.07	0	.02	7.7	.12
4	.02	18.2	0	.02	.12	.02	.12	.07	0	.02	7.0	.12
5	0	.23	0	.02	.12	.02	.18	.07	0	.07	6.8	.12
6	0	0	0	.02	.12	.01	.18	0	0	.02	6.6	16.9
7	0	0	.01	.02	.12	.01	.18	2.45	0	7.8	10.6	22
8	0	0	.01	.02	.12	.01	.30	1.28	0	9.1	6.8	22
9	0	0	0	.02	.12	.01	.57	.12	0	8.6	9.8	22
10	0	0	0	.02	.12	.02	.24	.12	0	13.0	19.0	22
11	0	0	0	.02	.12	.02	.24	.07	0	18.5	20.5	22
12	.01	0	0	15.6	.12	.01	.18	.02	0	a21	20.5	22
13	.02	.02	0	25	.12	.01	.18	.02	0	a15	25	23.5
14	.02	.02	6.0	23.5	.12	0	.12	.02	0	a7.1	25	22
15	0	.02	17.0	23.5	.12	.02	.12	0	0	a0	22	22
16	0	.35	17.3	29	.12	.02	.12	0	0	a8.6	26.5	23.5
17	0	.36	17.0	30.5	.12	.02	.32	0	6.4	a2.8	11.4	22
18	0	.16	16.7	29	.07	.02	.32	0	8.9	a4.8	.02	22
19	0	.07	16.7	27	.02	.02	.99	0	7.0	a9.6	0	20.5
20	0	.07	20	30.5	.02	.02	.68	0	.07	a9.1	0	24
21	0	.07	20.5	29	.02	.02	.89	0	8.6	7.4	0	25.5
22	0	.07	27	30.5	.02	.02	19.1	0	5.6	18.0	0	25
23	0	.07	29	30.5	.02	.02	30.5	0	.07	23.5	0	7.8
24	0	.21	11.0	30.5	.02	.02	29	0	.07	11.9	0	.02
25	0	.07	.12	10.9	.02	.02	29	0	.07	.07	14.1	.02
26	0	.23	.12	.02	.07	.02	11.0	0	.07	6.6	24	.02
27	0	.07	.12	.02	.07	.02	.07	0	.07	9.1	27	15.7
28	13.7	.22	.12	.58	.02	.02	.02	0	.07	8.4	14.0	23.5
29	23.5	.07	.12	.02	.02	.02	.02	-	.02	7.9	.02	25
30	10.8	.02	.06	.01	.02	.02	.07	-	.02	11.4	.07	16.1
31	0	.02	-	.04	-	.02	.07	-	.28	-	.07	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	23.5	0	1.55	2.40	48.1	148
August	22	0	1.86	2.88	57.7	177
September	29	0	6.63	10.3	199	611
October	30.5	0	11.8	18.3	366	1,120
November	2.8	.02	.168	.260	5.03	15
December	.29	0	.028	.043	.86	2.6
Calendar year 1948	46	0	3.66	5.66	1,340	4,110
January	30.5	.02	4.03	6.24	125	383
February	2.45	0	.159	.246	4.45	14
March	8.9	0	1.20	1.86	37.3	115
April	23.5	0	7.98	12.3	240	735
May	27	0	10.4	16.1	324	993
June	25.5	.02	15.6	24.1	468	1,430
Fiscal year 1948-49	30.5	0	5.13	7.94	1,880	5,740

a No gage-height record; discharge computed on basis of ditchman's notes.

Kanaha ditch near Lihue

Location.--Sharp-crested weir, lat. 22°03'50", long. 159°25'30", 750 feet downstream from intake and 7 miles northwest of Lihue. Altitude of gage, 540 feet (by barometer).

Records available.--August 1910 to June 1949.

Extremes.--Maximum discharge during year, 14.4 million gallons a day (22.3 second-feet) Feb. 7 (gage height, 0.57 foot); no flow at times.
1910-49: Maximum discharge recorded, 45 million gallons a day (70 second-feet) Dec. 24, 1927 (gage height, 3.22 feet, site and datum then in use); no flow at times.

Remarks.--Records poor. Ditch diverts water from North Fork Wailua River for domestic use only.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.43	0.12	0.43	0.67	0.31	0.31	0.43	0.21	0.80	0.43	0.05	0.80
2	.67	.21	.43	.67	.31	.21	.31	.21	.80	.43	0	.67
3	.55	.21	.43	.67	.43	.21	.31	.21	.67	.43	0	.67
4	.55	.43	.43	.55	.43	.21	.31	.21	.67	.43	0	.67
5	.43	.21	.43	.43	.43	.21	.31	.21	.55	.43	0	.67
6	.43	.12	.43	.43	.43	.21	.43	.21	.55	.55	0	.55
7	.31	.12	.43	.55	.31	.21	.43	1.96	.67	.24	.09	.13
8	.31	.12	.31	.43	.21	.38	.46	.67	.67	0	0	0
9	.31	.12	.21	.43	.52	.67	.69	.67	.55	0	.03	.25
10	.31	.54	.21	.43	.67	.55	.43	.43	.55	.04	.18	.67
11	.31	.80	.21	.67	.67	.55	.43	.31	.55	0	0	.81
12	.43	.80	.21	.55	.67	.55	.43	.31	.67	.10	.25	.67
13	.31	.94	.21	.31	.67	.55	.31	.31	.55	0	.80	.67
14	.21	.67	.40	.22	.67	.55	.31	.31	.55	.83	.80	.67
15	.21	.67	.25	.05	.67	.55	.43	.21	.55	2.2	.80	.67
16	.21	.85	.21	.43	.67	.67	.70	.21	.55	.68	1.24	.67
17	.21	.34	.21	.43	.55	.67	.55	.21	.23	.95	2.4	.55
18	.21	.31	.21	.43	.43	.55	.62	.21	0	1.07	1.00	.43
19	.21	.21	.31	.43	.43	.55	.76	.21	.36	0	.94	.31
20	.21	.21	.31	.55	.43	.55	.94	.21	.55	0	.94	.43
21	.31	.21	.21	.55	.55	.55	.55	.31	.18	0	.94	.31
22	.31	.21	.76	.67	.55	.43	.43	.31	.39	.31	1.09	.31
23	.31	.21	.80	.67	.55	.43	.43	.55	.43	.46	.94	.31
24	.31	.21	.94	1.58	.55	.55	.43	.55	.43	1.40	.94	.31
25	.31	.21	.94	2.2	.43	.55	.43	.55	.43	.94	.77	.31
26	.31	.31	.94	2.4	.43	.43	.35	.55	.43	.35	.55	.21
27	.31	.21	1.09	1.40	.21	.43	.31	.67	.43	0	.80	.21
28	.21	.43	1.09	.55	.21	.55	.31	.55	.43	0	.80	.64
29	.12	.31	.80	.55	.21	.55	.21	-	.43	0	.80	.80
30	.12	.31	.67	.55	.21	.43	.21	-	.43	.04	.80	.55
31	.12	.31	-	.55	-	.43	.21	-	.43	-	.80	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0.67	0.12	0.308	0.477	9.56	29
August	.94	.12	.353	.546	10.9	34
September	1.09	.21	.484	.749	14.5	45
October	2.4	.05	.677	1.05	21.0	64
November	.67	.21	.460	.712	13.8	42
December	.67	.21	.459	.710	14.2	44
Calendar year 1948	2.4	0	.302	.467	111	340
January	.94	.21	.434	.671	13.5	41
February	1.96	.21	.412	.637	11.5	35
March	.80	0	.499	.772	15.5	48
April	2.2	0	.410	.634	12.3	38
May	2.4	0	.605	.936	18.8	58
June	.81	0	.497	.769	14.9	46
Fiscal year 1948-49	2.4	0	.467	.723	170	524

East Branch of North Fork Wailua River near Lihue

Location.--Lat. 22°04'10", long. 159°25'05", 1,200 feet upstream from confluence with North Fork and 7½ miles northwest of Lihue. Altitude of gage, 500 feet (by barometer).

Drainage area.--6.2 square miles.

Records available.--July 1912 to June 1949.

Average discharge.--29 years (1920-49), 30.5 million gallons a day (47.2 second-feet).

Extremes.--Maximum discharge during year, 2,530 million gallons a day (3,910 second-feet) Aug. 16 (gage height, 9.44 feet), from rating curve extended above 270 million gallons a day by test on model of station site; minimum, 12.6 million gallons a day (19.5 second-feet) June 10, 11, 19, 27.

1912-49: Maximum discharge, 3,340 million gallons a day (5,170 second-feet) Dec. 24, 1927 (gage height, 10.57 feet), from rating curve extended above 500 million gallons a day; minimum, 4.4 million gallons a day (6.8 second-feet) July 3, 13, 1926.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversions above station.

Revisions (fiscal years).--W 770: 1932-33.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Jan. 8				Jan. 9 to June 30			
1.2	12.8	2.5	112	1.2	14.1	2.0	57
1.4	19.8	3.0	167	1.4	21.2	2.5	113
1.6	28	3.5	216	1.6	30.4	3.0	167
1.8	39	4.0	280	1.8	42.1	3.5	216
2.0	55						

Jan. 9 to June 30			
4.0	280		
4.5	358		
5.0	456		
5.5	575		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23.5	17.2	52	26.5	18.3	124	38	24.5	73	26.5	21	17.4
2	44	16.1	39.5	25	17.2	56	54	23.5	73	21.5	17.4	16.1
3	40	17.6	69	23	22	42	40	22.5	46	21	16.4	15.8
4	29	19.6	29.5	20	18.3	41	30.5	22	31	19.7	15.8	15.4
5	27	60	27	27	18.7	41	29.5	21.5	26.5	19.7	15.1	15.1
6	27	20.5	25.5	19.8	16.8	47	52	31	24.5	18.9	14.8	14.1
7	24	25.5	51	18.3	45	32	83	594	46	18.5	17.1	13.8
8	33.5	17.6	27	17.6	29	41	285	458	43	17.4	14.4	13.5
9	38	16.8	23.5	16.1	19.8	75	194	206	28	17.1	13.8	13.2
10	25	17.2	22.5	15.8	21.5	111	88	133	24.5	22.5	13.5	12.9
11	22.5	24.5	21.5	15.1	34.5	63	55	83	23.5	28.5	13.2	13.2
12	97	29.5	20.5	14.5	25	50	47	62	48	30.5	13.2	13.5
13	81	77	19.4	15.1	43	72	43	64	49	21	16.2	16.4
14	31.5	25	18.3	14.1	23	55	35.5	48	27	21.5	19.3	14.4
15	56	23	18.0	13.5	23	108	58	52	24	21	13.5	14.4
16	34.5	225	18.0	13.8	22	42	265	52	22.5	17.8	22	17.7
17	36	252	17.2	23	40	46	a230	42	21	17.1	151	13.5
18	27	80	16.8	16.1	26.5	35.5	a280	37	20.5	17.1	28.5	12.9
19	25	58	16.1	14.5	23	39	a200	33.5	25	16.7	21.5	12.6
20	25	61	16.1	28.5	21.5	73	a250	30.5	31.5	18.2	18.5	13.7
21	24	39	15.1	19.5	20	82	a50	28	21	16.4	17.1	21
22	28	33.5	25	23	32	52	a35	26	50	31.5	16.4	23.5
23	22.5	30	33.5	31	50	48	a33	25.5	32	48	15.4	26
24	20.5	121	24.5	28.5	32	70	a30	23.5	24	90	15.1	15.4
25	19.1	148	22.5	20.5	26.5	47	a35	22.5	30	26	16.1	15.8
26	19.4	187	22.5	19.3	113	36	a40	23	35.5	22	21.5	13.5
27	19.4	116	58	21	87	44	a50	24.5	27	20	25	12.9
28	18.7	219	68	46	45	73	a35	26	31	18.5	56	14.8
29	18.3	106	35	25	50	54	a33	-	29.5	17.8	29.5	25.5
30	18.0	82	28.5	30	100	64	a30	-	39.5	19.8	23	28.5
31	18.3	56	-	22.5	-	42	a28	-	24.5	-	20.5	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	97	18.0	31.4	48.6	973	2,990
August	252	16.1	71.6	111	2,220	6,810
September	69	15.1	29.4	45.5	881	2,700
October	46	13.5	21.4	33.1	664	2,040
November	113	16.8	35.5	54.9	1,060	3,260
December	124	32	58.2	90.0	1,810	5,540
Calendar year 1948	252	13.5	40.6	62.8	14,850	45,560
January	285	28	88.9	138	2,760	8,460
February	594	21.5	80.0	124	2,240	6,870
March	73	20.5	33.9	52.5	1,050	3,230
April	90	16.4	24.1	37.3	722	2,220
May	151	13.2	23.6	36.5	732	2,250
June	28.5	12.6	16.2	25.1	486	1,490
Fiscal year 1948-49	594	12.6	42.7	66.1	15,600	47,860

Peak discharge (base, 1,000 m.g.d.).--Aug. 16 (3:30 p.m.) 2,530 m.g.d. (3,910 sec.-ft.); Jan. 8 (6 p.m.) 1,680 m.g.d. (2,600 sec.-ft.); Feb. 8 (4 p.m.) 2,360 m.g.d. (3,650 sec.-ft.).

a No gage-height record; discharge computed on basis of records for North and South Forks Wailua River.

Wailua ditch near Kapaa

Location.--Lat. 22°04'25", long. 159°24'05", 2,000 feet downstream from Wailua Reservoir, 5¼ miles west of Kapaa, and 7 miles north of Lihue. Altitude of gage, 462 ± 5 feet (by estimating slope of 2,000-foot length of ditch on basis of Lihue Plantation Co. levels).

Records available.--November 1936 to June 1949. Records collected by East Kauai Water Co. July 1922 to April 1932 at site 2 miles upstream, below intake, and April 1932 to November 1936 at present site.

Average discharge.--12 years (1937-49), 12.6 million gallons a day (19.5 second-feet).

Extremes.--Maximum discharge during year, 36 million gallons a day (56 second-feet) Aug. 4 (gage height, 3.28 feet); minimum, 0.1 million gallons a day (0.2 second-foot) many times.

1936.49: Maximum discharge, 46 million gallons a day (71 second-feet) Oct. 6, 1938 (gage height, 3.96 feet); no flow May 15 to June 4, 1940, Sept. 4, 5, 1943.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts water from North Fork Wailua River to reservoir 2,000 feet above station and thence to fields for irrigation of sugarcane.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.6	14.5	0.3	5.1	6.6	0.4	0.3			6.6	5.1	5.5
2	10.6	14.5	.3	.5	6.6	.4	.3	a0.2		6.6	5.0	6.2
3	10.1	24	.3	3.2	6.6	.4	.2			6.6	9.1	4.4
4	10.1	32	.3	11.4	7.1	.4	.2			6.6	10.1	.9
5	9.6	33.5	.3	16.3	7.1	.4	.2	2.0	a0.2	6.6	10.1	1.0
6	9.6	24	4.8	17.5	7.1	.4	.2	4.6		6.6	10.1	1.0
7	9.1	13.9	12.2	17.5	7.1	.4	.2	2.1		6.2	10.1	3.4
8	9.1	13.9	12.8	12.4	4.3	.4	.2	.2		6.2	10.6	4.2
9	10.6	15.1	15.1	7.6	2.9	.5	.3	.2		6.2	21.5	4.2
10	12.8	15.1	19.9	7.6	2.8	.5	.2			6.2	30.5	10.9
11	12.2	18.7	17.5	16.3	1.2	.5	.2		6.9	6.2	27.5	13.2
12	16.3	19.9	16.3	26.5	.4	.5	.2		13.4	6.2	25	8.1
13	21	15.1	22.5	26.5	.4	.5	.2		12.8	6.2	24	8.1
14	19.9	15.1	29	25	.4	.5	.2		13.9	6.2	27.5	8.1
15	12.6	15.1	30.5	15.2	.4	.5	.2		14.5	6.2	26.5	10.6
16	7.6	16.3	25	3.3	.4	.6	.2		15.1	6.2	22.5	15.1
17	7.6	16.3	18.7	3.8	.4	.4	.2		11.2	5.7	11.5	7.3
18	7.6	13.9	13.4	6.2	.4	.4	.2		7.6	5.7	5.4	2.8
19	8.6	13.9	9.1	6.2	.4	.4	.2	a.2	6.6	5.7	11.7	2.8
20	11.7	13.4	9.6	6.2	.4	.4	.3		6.6	5.5	14.5	2.9
21	11.7	13.9	16.3	6.2	.4	.4	.2		6.2	11.2	11.1	2.9
22	11.7	13.9	22.5	6.2	.4	.4	.2		6.2	14.5	5.6	2.9
23	12.2	13.9	22.5	6.2	.4	.4	.2		6.2	9.2	5.3	3.0
24	12.2	13.9	12.2	6.2	.4	.4	.2		6.2	4.7	5.5	3.0
25	11.7	15.1	2.3	6.2	.4	.4	.2		6.2	5.0	5.2	2.8
26	22	15.1	5.2	6.2	.4	.5			6.2	2.5	5.3	2.8
27	32	11.7	10.6	6.2	.4	.4			6.2	1.0	5.6	7.2
28	34.5	8.6	14.5	6.2	.4	.4	a.2		6.2	1.2	5.5	12.2
29	34.5	8.1	11.7	2.9	.4	.4		-	11.0	1.2	5.0	12.2
30	22	4.2	7.6	1.0	.4	.4		-	15.1	3.8	5.0	12.2
31	14.5	2.0	-	1.6	-	.4		-	11.8	-	5.1	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	34.5	7.6	14.4	22.3	446	1,370
August	33.5	2.0	15.4	23.8	479	1,470
September	30.5	.3	12.8	19.8	383	1,180
October	26.5	.5	9.34	14.5	289	888
November	7.1	.4	2.23	3.45	67.0	206
December	.6	.4	.43	.66	13.4	41
Calendar year 1948	34.5	.3	6.84	10.6	2,500	7,690
January	.3	.2	.21	.32	6.6	20
February	4.6	.2	.49	.76	13.7	42
March	15.1	.2	6.39	9.89	198	608
April	14.5	1.0	5.95	9.21	178	548
May	30.5	5.0	12.3	19.0	382	1,170
June	15.1	.9	6.06	9.38	182	558
Fiscal year 1948-49	34.5	.2	7.23	11.2	2,640	8,100

a No gage-height record; discharge computed on basis of ditchman's notes.

Kapaa River at Kapahi ditch intake, near Kapaa

Location.--Concrete masonry dam, lat. 22°06'05", long. 159°22'30", 4 miles northwest of Kapaa and 4½ miles northwest of Wailua. Altitude of gage, 365 feet (by barometer).

Drainage area.--3.3 square miles.

Records available.--December 1936 to June 1949.

Average discharge.--12 years (1937-49), 13.3 million gallons a day (20.6 second-feet).

Extremes.--Maximum discharge during year, 3,570 million gallons a day (5,520 second-feet) Feb. 7 (gage height, 4.65 feet), from rating curve extended above 330 million gallons a day; no flow many times.
1936-49: Maximum discharge, that of Feb. 7, 1949; no flow at times.

Remarks.--Records fair. Entire flow is diverted into several ditches above station. Records do not include flow of Kapahi ditch.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

-0.05	0	0.4	11.5	0.9	72	1.6	274
0.0	.1	.5	19.0	1.0	92	1.8	365
.1	.4	.6	28.5	1.1	115	2.0	470
.2	1.9	.7	40	1.2	140	2.2	595
.3	5.3	.8	55	1.4	200	2.4	730

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0.9	19.7	4.6	0	43	18.2	12.2	54	17.4	9.2	11.2
2	18.4	.2	16.0	8.6	2.0	19.0	23.5	15.2	50	10.3	7.9	9.6
3	17.7	0	29	8.4	1.0	15.2	16.8	10.8	26.5	13.0	1.8	9.0
4	13.0	0	13.8	.2	0	18.8	14.8	11.1	17.5	6.3	3.6	9.0
5	9.7	.3	11.5	.9	0	20.5	14.5	22.5	16.0	8.3	1.8	10.9
6	0	0	9.2	0	0	21	34	29.5	14.5	1.2	0	.9
7	0	0	6.1	0	16.6	16.8	26.5	774	38.5	0	.1	0
8	0	0	1.5	0	7.0	24.5	208	246	21	0	0	0
9	0	0	0	0	9.0	34.5	121	115	8.9	0	0	0
10	1.8	0	0	0	9.1	44	35	60	4.8	6.2	0	0
11	11.5	0	0	0	17.7	28	21	28.5	4.4	13.5	0	0
12	56	.1	0	0	9.6	22	19.5	21	54	14.1	0	0
13	25.5	.8	0	0	17.7	28.5	17.5	28.5	37.5	.6	0	.5
14	1.7	.7	0	0	13.0	27	15.2	19.5	7.6	7.8	0	0
15	28.5	12.6	0	0	13.8	58	31	21	6.1	17.6	0	0
16	13.0	135	0	0	16.0	16.8	136	18.3	12.2	1.0	15.7	.2
17	18.2	264	0	2.6	35	19.1	188	17.5	8.4	2.9	82	0
18	12.7	23	0	.4	17.5	15.2	234	13.8	3.9	2.6	11.0	0
19	0	14.0	0	0	18.5	20	246	13.8	12.6	.1	.6	0
20	.1	27	0	.1	14.5	44	123	14.5	18.9	0	0	0
21	0	16.8	0	0	14.5	42	29.5	10.0	2.1	0	0	7.1
22	.6	13.8	0	0	22	23	31	9.0	17.6	1.0	0	17.9
23	0	.7	.7	5.3	37.5	22.5	28.5	11.8	10.6	13.9	0	16.8
24	0	81	1.2	13.0	23.5	28	19.0	9.3	6.3	26.5	0	5.6
25	0	43	4.0	.4	16.8	19.0	18.4	9.4	8.0	0	2.6	15.1
26	0	66	5.0	0	67	16.0	7.4	13.4	13.3	.8	11.0	11.5
27	0	44	14.9	.5	34.5	24	17.4	18.2	16.8	6.3	4.2	1.1
28	0	165	13.5	6.5	20	36	8.5	14.3	18.6	9.6	46	6.0
29	0	34	4.6	0	24.5	27.5	10.1	-	6.1	2.0	22	15.7
30	0	23	1.1	2.9	33.5	33	10.1	-	14.4	.2	19.0	14.6
31	0	16.0	-	6.4	-	21	10.1	-	8.6	-	14.5	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	56	0	7.37	11.4	228	701
August	264	0	31.7	49.0	982	3,010
September	29	0	5.06	7.83	152	466
October	13.0	0	1.96	3.03	60.8	187
November	67	0	17.1	26.5	512	1,570
December	58	15.2	26.7	41.3	828	2,540
Calendar year 1948	264	0	17.4	26.9	6,360	19,530
January	246	7.4	55.9	86.5	1,730	5,320
February	774	9.0	56.7	87.7	1,590	4,870
March	54	2.1	17.4	26.9	540	1,660
April	26.5	0	6.11	9.45	183	562
May	82	0	8.16	12.6	253	776
June	17.9	0	5.42	8.39	163	499
Fiscal year 1948-49	774	0	19.8	30.6	7,220	22,160

Peak discharge (base, 1,400 m.g.d.).--Aug. 17 (4:30 a.m.) 1,970 m.g.d. (3,050 sec.-ft.); Feb. 7 (2 p.m.) 3,570 m.g.d. (5,520 sec.-ft.).

Kapahi ditch near Kealia

Location.--Parshall flume, lat. 22°06'00", long. 159°22'30", 500 feet downstream from intake and 4½ miles west of Kealia. Altitude of gage, 360 feet (by barometer).

Records available.--April 1909 to May 1914, May 1915 to June 1949.

Average discharge.--31 years (1917-20, 1921-49), 5.62 million gallons a day (8.70 second-feet).

Extremes.--Maximum discharge during year, 55 million gallons a day (85 second-feet) Aug. 13 (gage height, 2.88 feet); no flow for several days.
1909-14, 1915-49: Maximum discharge, 233 million gallons a day (361 second-feet) Mar. 31, 1923 (gage height, 3.15 feet, control then in use); no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts water from Kapaa River for irrigation in vicinity of Kapaa.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.0	5.0	0.04	7.6	4.5	0.01	a0.02	1.53	3.8	4.5	6.8	a1.2
2	6.0	2.75	.04	.27	1.78	.02	a.04	.19	2.55	3.2	3.6	1.96
3	.37	3.45	.02	.23	8.8	.02	a.2	.16	.31	.23	9.4	2.25
4	.16	3.15	.01	5.7	5.8	.02	.26	.16	.31	5.3	6.7	2.75
5	.13	12.2	.02	17.6	6.1		1.19	.16	.27	3.95	5.2	.40
6	10.9	3.25	1.43	7.6	4.6		.27	.19	.27	11.1	3.7	9.7
7	9.5	5.7	14.6	6.2	15.3		.23	3.65	.31	11.6	5.7	9.8
8	12.8	2.95	9.2	5.6	9.7		.53	.10	7.8	11.0	3.7	9.6
9	15.7	2.75	5.1	4.4	.16		.62	.10	7.0	10.4	a3.6	6.5
10	12.5	3.8	4.9	4.0	.01		a.25	.07	8.9	11.3		3.45
11	2.0	7.2	4.6	3.6	0		a.22	.07	8.1	8.0		4.0
12	8.3	11.2	4.4	3.6	0		a.19	.04	6.4	12.7		4.8
13	13.8	28	4.0	4.4	0		.16	.04	.23	13.6		9.8
14	8.2	12.2	4.0	3.7	0		.16	.02	9.1	7.7		4.5
15	13.4	2.25	3.9	3.25	1.07		.19	.02	7.8	.50		7.7
16	7.5	11.1	3.9	3.6	0		1.30	2.45	.62	12.2		9.6
17	4.0	4.7	3.75	8.2	0	a.05	.56	1.86	1.49	8.1		4.2
18	.13	16.5	3.7	5.5	0		.19	2.35	.77	11.1		4.2
19	5.1	13.2	3.8	4.5	0		.07	2.65	.87	8.2		4.3
20	12.8	7.0	3.7	15.8	0		.21	.23	.16	4.6	a4	6.6
21	13.1	.27	3.6	6.8	0		.07	3.5	5.0	3.9		6.9
22	8.6	.23	3.9	12.0	0		.04	3.3	4.3	17.7		2.95
23	10	11.5	8.3	8.2	0		.04	3.35	2.55	14.9		2.75
24	4.3	17.9	5.7	.50	.01		.02	3.25	2.7	1.56		6.0
25	3.6	22.5	.35	7.0	.01		.02	3.1	2.7	5.6		4.3
26	3.6	7.9	.31	7.0	.01		.02	3.2	2.65	8.9		.56
27	3.25	5.4	8.7	6.4	0		.04	.23	.23	5.3		10.0
28	3.25	.94	16.5	16.2	0		.01	3.8	3.25	1.27		8.6
29	3.35	.16	12.7	8.9	0		.01	-	12.4	9.8		7.8
30	4.0	.10	11.3	8.5	0		.01	-	9.8	17.2		12.8
31	6.8	0	-	.77	-		1.40	-	5.3	-		-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	15.7	0.13	6.91	10.7	214	657
August	28	0	7.27	11.2	225	691
September	16.5	.01	4.88	7.55	146	449
October	17.6	.23	6.37	9.86	198	606
November	15.3	0	1.93	2.99	57.8	178
December	-	-	.046	.071	1.42	4.4
Calendar year 1948	28	0	4.13	6.39	1,510	4,640
January	1.40	.01	.275	.425	8.54	26
February	3.8	.02	1.42	2.20	39.8	122
March	12.4	.16	3.80	5.88	118	362
April	17.7	.23	8.18	12.7	245	753
May	-	-	4.40	6.81	136	419
June	12.8	.40	5.67	8.77	170	522
Fiscal year 1948-49	28	0	4.28	6.62	1,560	4,790

a No gage-height record; discharge computed on basis of recorded range in stage and records for Kapaa River at Kapahi ditch intake.

Makaleha ditch near Kealia

Location.--Parshall flume, lat. 22°06'55", long. 159°22'05" (corrected), at end of last tunnel from which water spills down slope into Mimino Reservoir, 3.9 miles northwest of Kealia, and 4.1 miles northwest of Kapaa.

Records available.--November 1936 to June 1949. Records at site 150 feet downstream collected by East Kauai Water Co. July 1925 to November 1936.

Average discharge.--12 years (1937-49), 3.83 million gallons a day (5.93 second-feet).

Extremes.--Maximum discharge during year, 28 million gallons a day (43 second-feet) Feb. 7 (gage height, 2.87 feet); minimum, 0.07 million gallons a day (0.11 second-foot) Sept. 4-8.

1936-49: Maximum discharge, that of Feb. 7, 1949; minimum, 0.02 million gallons a day (0.03 second-foot) Nov. 28, 29, 1942, Aug. 24, 1943, Sept. 24-27, 1944, Nov. 13, 1945, Aug. 31, 1947.

Remarks.--Records good. Ditch diverts water from Makaleha Stream for irrigation of sugarcane.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	6.8	0.10	6.8	6.4	0.19	0.16	0.11	0.21	0.21	0.17	0.14
2	4.8	6.4	.10	6.4	6.4	.19	.16	.11	.48	.19	.17	.11
3	4.8	7.2	.08	6.4	6.8	.17	.16	3.15	.28	.17	.17	.10
4	4.7	7.7	.07	5.9	6.4	.17	.17	2.65	.21	.17	.17	.10
5	4.5	11.2	g.07	6.4	6.6	.17	.19	.34	.16	.17	3.6	.10
6	4.7	7.4	g.07	5.9	6.4	.16	.25	.30	.14	.17	6.8	.08
7	1.97	9.2	g.07	5.9	7.2	.16	.21	10.8	.16	.17	7.7	.08
8	.17	6.8	g2.6	5.9	3.9	.16	.37	2.7	.12	.17	6.8	.08
9	.14	6.8	g6.8	5.4	2.95	.16	.57	2.9	.12	.14	6.8	2.55
10	.11	8.3	g6.8	5.4	7.2	.17	.30	.95	.11	.14	6.4	5.4
11	.10	10.8	6.8	5.4	7.7	.17	.28	.30	.11	.16	6.4	6.4
12	.14	11.2	6.4	5.4	7.2	.17	.26	.17	.12	.16	6.4	6.8
13	.17	7.0	5.9	5.4	5.6	.16	.23	.11	.14	.16	7.7	7.7
14	.14	.19	5.9	5.4	.37	.17	.23	.10	.14	.14	8.7	6.8
15	.20	.19	5.9	5.4	.34	.21	.30	.08	.12	.16	6.8	7.2
16	.17	1.92	5.9	5.4	.34	.19	.78	.10	.11	.14	4.9	7.2
17	.16	7.6	6.2	6.4	.64	.19	.33	.14	2.2	.14	.41	6.4
18	.12	1.81	5.9	5.9	.48	.17	.43	.12	6.8	.14	.22	6.4
19	.12	.14	5.9	5.9	.44	.16	.43	.12	8.7	4.8	.16	6.8
20	.11	.12	5.9	6.4	.40	.17	.91	.11	8.7	8.7	.14	6.8
21	1.69	.17	5.9	6.4	.34	.19	.24	.11	7.7	8.2	.12	4.9
22	9.8	.17	5.9	6.4	.34	.19	.19	.11	9.2	10.0	.12	.21
23	8.6	.17	7.2	6.8	.44	.17	.16	.11	8.7	11.2	.12	.21
24	7.2	.16	7.4	6.8	.40	.17	.16	.10	8.7	10.7	.11	.19
25	7.2	.16	7.2	6.4	.37	.16	.14	.10	8.7	9.2	.11	.24
26	6.8	.17	7.2	6.4	1.05	.16	.14	.12	4.7	4.0	.11	.21
27	7.2	.17	7.7	6.4	.49	.16	.16	.12	.19	.19	.11	.21
28	6.4	.22	7.2	7.2	.19	.14	.12	.11	.19	.19	.56	.21
29	5.0	.10	6.8	6.6	.16	.16	.12	-	.19	.19	.34	.21
30	6.4	.10	6.4	6.8	.17	.16	.12	-	.24	.19	.21	.23
31	7.4	.10	-	6.8	-	.16	.12	-	.19	-	.16	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	9.8	0.10	3.40	5.26	106	324
August	11.2	.10	3.89	6.02	120	370
September	7.7	.07	4.88	7.55	146	449
October	7.2	5.4	6.14	9.50	190	584
November	7.7	.16	2.92	4.52	87.7	269
December	.21	.14	.170	.263	5.28	16
Calendar year 1948	11.3	.04	2.81	4.35	1,030	3,150
January	.91	.12	.271	.419	8.39	26
February	10.8	.08	.937	1.45	26.2	81
March	9.2	.11	2.51	3.88	77.8	239
April	11.2	.14	2.35	3.64	70.5	216
May	8.7	.11	2.67	4.13	82.7	254
June	7.7	.08	2.80	4.33	84.1	258
Fiscal year 1948-49	11.2	.07	2.75	4.25	1,000	3,090

g Discharge computed from graph based on recorded range in stage and ditchman's notes.

Anahola River near Kealia

Location.--Concrete dam and orifice control, lat. 22°08'55", long. 159°21'20", just upstream from intake of Lower Anahola ditch, 4½ miles northwest of Kealia. Datum of gage, 295.11 feet above mean sea level (Highway Department bench mark).

Drainage area.--5.5 square miles.

Records available.--August to November 1910, December 1912 to June 1949.

Average discharge.--30 years (1919-49), 13.5 million gallons a day (20.9 second-feet).

Extremes.--Maximum discharge during year, 3,890 million gallons a day (6,020 second-feet) Feb. 7 (gage height, 7.99 feet), from rating curve extended above 230 million gallons a day; minimum, 3.05 million gallons a day (4.72 second-feet) May 11-13.
1910, 1912-49: Maximum discharge, 7,940 million gallons a day (12,300 second-feet) Apr. 1, 1948 (gage height, 11.06 feet), from rating curve extended above 230 million gallons a day; minimum, slightly less than 1.4 million gallons a day (about 2.2 second-feet) Sept. 12, 13, 1923.

Remarks.--Records good below 30 million gallons a day, fair above. Anahola ditch diverts water 3 miles above station for irrigation in vicinity of Kealia.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 28 to Feb. 2, Feb. 11 to Mar. 29, May 29 to June 3)

July 1 to Feb. 7						Feb. 7 to June 30					
0.9	3.15	1.6	16.2	3.0	170	1.1	2.82	1.8	22.3	3.5	282
1.0	3.90	1.8	28.1	3.5	295	1.2	3.62	2.0	35	4.0	456
1.2	5.92	2.0	42	4.0	470	1.4	6.11	2.5	82	4.5	692
1.4	8.75	2.6	105	4.6	750	1.6	12.5	3.0	162		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.7	4.9	14.2	6.4	3.65	16.9	7.9	9.8	19.9	8.0	8.2	5.9
2	7.1	4.2	10.4	5.4	3.55	8.4	7.4	9.5	18.4	6.3	4.5	5.9
3	7.6	4.4	13.5	5.0	5.0	7.4	7.2	9.2	12.5	5.8	3.95	5.6
4	5.6	4.8	9.5	4.4	4.4	7.7	6.4	9.5	9.3	5.4	3.85	5.6
5	4.8	11.5	8.8	4.9	4.1	8.0	6.3	15.2	8.6	5.4	3.6	5.3
6	6.9	4.6	8.2	4.6	3.7	7.0	11.8	13.6	8.0	5.0	3.45	5.0
7	5.6	4.8	9.0	4.3	43	8.3	7.9	756	27.5	5.3	3.6	4.7
8	5.5	4.0	7.6	3.95	12.8	13.8	114	280	15.2	4.9	3.45	4.7
9	5.1	3.7	6.9	3.7	6.2	9.8	33	110	9.5	4.6	3.3	4.2
10	5.9	4.2	6.4	3.65	14.8	18.5	21	53	8.6	8.7	3.2	4.0
11	4.7	4.5	6.5	3.5	17.0	12.0	13.7	29	8.0	9.1	3.15	4.5
12	22	6.3	5.9	3.4	7.4	11.7	20.5	20.5	9.1	6.6	3.05	4.8
13	7.7	10.1	5.5	3.7	8.8	9.8	12.0	18.1	9.6	5.3	3.55	5.0
14	5.6	4.2	5.3	3.9	5.9	9.4	10.7	15.3	7.1	5.2	4.7	4.6
15	21	4.3	5.2	3.55	6.1	15.0	23	14.8	6.6	5.9	3.45	4.7
16	7.6	224	5.2	5.0	5.6	8.4	218	13.4	6.1	4.8	5.0	4.0
17	6.7	211	5.9	4.1	17.3	9.0	137	12.1	5.9	4.5	51	3.6
18	5.7	26	5.4	4.3	7.9	7.7	183	11.3	5.8	4.8	6.6	3.6
19	5.6	16.2	5.4	4.1	8.0	7.9	155	10.9	8.6	4.5	4.9	3.6
20	6.5	18.6	4.9	9.3	6.5	10.4	313	10.1	13.2	4.2	4.2	5.1
21	5.6	10.4	4.7	4.8	5.5	11.1	56	9.8	7.1	4.2	3.85	5.9
22	6.3	8.8	4.7	5.7	6.8	8.6	33.5	9.2	10.3	8.4	3.6	4.7
23	5.9	8.0	5.9	6.2	8.2	7.9	25	9.2	7.7	8.3	3.45	5.4
24	5.7	73	5.8	6.7	7.7	9.0	21	8.9	6.1	7.7	3.6	4.2
25	4.9	31.5	5.1	4.5	6.5	7.2	18.0	8.6	5.9	5.2	24.5	3.85
26	4.5	19.2	5.4	4.4	21.5	6.7	19.2	9.5	5.8	4.7	4.9	3.45
27	4.8	16.8	9.6	4.5	14.2	7.6	19.4	9.2	5.3	4.6	5.4	3.2
28	4.5	91	7.6	6.0	9.5	11.6	12.8	9.2	5.3	4.0	69	3.4
29	4.2	25	7.6	5.3	8.8	10.4	11.0	-	5.6	3.85	8.0	4.9
30	4.6	17.4	6.9	5.4	13.1	13.0	10.7	-	21	4.5	6.6	4.7
31	5.4	12.4	-	4.2	-	8.6	10.1	-	6.1	-	6.1	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	22	4.2	6.72	10.4	208	639
August	224	3.7	28.7	44.4	890	2,730
September	14.2	4.7	7.10	11.0	213	654
October	9.3	3.4	4.80	7.43	149	457
November	43	3.55	9.78	15.1	294	901
December	18.5	6.7	9.96	15.4	309	948
Calendar year 1948	337	3.4	14.4	22.3	5,250	16,120
January	313	6.3	49.9	77.2	1,550	4,740
February	756	8.6	53.4	82.6	1,490	4,590
March	27.5	5.3	9.80	15.2	304	932
April	9.1	3.85	5.66	8.76	170	521
May	69	3.05	8.70	13.5	270	828
June	5.9	3.2	4.60	7.12	138	424
Fiscal year 1948-49	756	3.05	16.4	25.4	5,980	18,360

Peak discharge (base, 900 m.g.d.).--Aug. 16 (2:30 p.m.) 3,010 m.g.d. (4,660 sec.-ft.); Jan. 8 (7 p.m.) 1,000 m.g.d. (1,550 sec.-ft.); Jan. 20 (7 a.m.) 2,300 m.g.d. (3,560 sec.-ft.); Feb. 7 (1 p.m.) 3,890 m.g.d. (6,020 sec.-ft.).

208538 O - 52 - 3

Anahola ditch above Kaneha Reservoir, near Kealia

Location.--Parshall flume, lat. 22°08'00", long. 159°22'30", at point of discharge into Kaneha Reservoir, 500 feet below wasteway gates and 5 miles northwest of Kealia. Datum of gage is 821.8 feet above mean sea level (Lihue Plantation bench mark).

Records available.--June 1934 to June 1949. May 1915 to December 1921, a third of a mile upstream, above Anahola ditch wasteway (includes flow of wasteway). December 1921 to June 1934, 20 feet below wasteway gates.

Average discharge.--26 years (1921-25, 1927-49), 3.30 million gallons a day (5.11 second-feet).

Extremes.--Maximum discharge during year, 100 million gallons a day (155 second-feet) Aug. 24 (gage height, 4.2 feet); minimum, 0.01 million gallons a day (0.02 second-feet) Aug. 19.
1915-49: Maximum discharge recorded, 130 million gallons a day (201 second-feet) Jan. 16, 1921 (gage height, 6.25 feet, site and datum then in use); no flow at times.

Remarks.--Records excellent. Ditch diverts water from Anahola River to Kaneha Reservoir, where it is stored for irrigation.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.65	4.4	0.08	8.0	2.9	0.09	0.04	0.02	3.45	0.04	6.1	3.5
2	9.2	3.0	.06	5.6	2.65	.04	.04	1.52	.08	.04	2.55	3.0
3	10.3	2.9	.08	5.5	5.7	.04	.04	3.1	.04	.04	2.3	2.75
4	5.0	4.1	.04	3.5	4.6	.04	.02	3.65	.02	.02	2.1	3.3
5	3.75	13.2	.04	6.8	3.5	.04	.02	8.2	.02	1.88	2.0	3.0
6	10.8	3.45	.04	3.65	2.75	.04	.10	10.0	.04	2.3	1.83	2.45
7	4.9	4.4	.04	3.3	16.2	.04	.03	6.0	.16	2.35	2.2	2.3
8	5.2	2.75	2.85	2.75	9.1	.08	.43	1.53	.04	2.1	1.92	2.3
9	4.0	2.75	3.4	2.55	4.2	.08	.13	1.30	.04	1.92	1.83	2.2
10	5.6	4.3	3.2	2.35	12.9	.11	.08	.36	.02	.88	1.74	1.92
11	4.0	9.9	3.9	2.3	13.5	.06	.04	.04	.02	12.3	1.74	2.3
12	21.5	11.4	3.0	2.1	6.6	.06	.04	.04	.04	6.2	1.83	2.35
13	10.1	13.6	2.65	2.45	9.8	.04	.02	.04	.04	3.4	3.6	2.65
14	4.2	4.1	2.35	2.55	4.2	.09	.02	.04	.02	4.7	5.0	2.0
15	15.5	4.4	2.35	2.0	5.9	.09	.10	.04	.02	5.8	2.0	2.3
16	6.8	29	2.45	2.35	5.5	.04	.68	.04	.02	2.75	8.1	2.1
17	5.2	10.8	3.6	3.9	9.6	.04	.27	.04	1.81	2.55	16.8	1.83
18	4.2	.02	3.4	4.9	.08	.02	.37	.04	2.3	3.0	4.0	1.92
19	4.6	.01	3.4	3.1	.04	.02	.36	.04	7.9	2.65	2.55	2.0
20	5.8	.04	2.9	9.7	.02	.06	.70	.04	12.1	3.5	2.2	3.85
21	4.5	.04	2.45	3.65	.02	.04	.06	.04	3.5	2.45	2.0	6.7
22	11.1	.04	3.75	12.1	.02	.02	.06	.04	13.6	13.0	1.83	6.6
23	4.6	2.0	6.7	7.4	.04	.02	.04	.04	8.1	9.8	1.74	6.8
24	5.2	22.5	7.5	10.9	.04	.02	.06	.04	4.7	8.0	1.74	2.55
25	3.9	5.7	3.2	3.65	.02	.02	.06	.04	6.8	3.65	14.5	3.0
26	3.1	.04	5.8	4.8	.16	.02	.08	.06	2.3	3.5	5.8	2.1
27	4.3	.51	14.0	4.1	.06	.04	.06	.06	.04	3.9	5.8	1.83
28	3.3	.28	12.2	11.1	.04	.08	.04	4.5	.06	2.45	26.5	4.2
29	2.75	.04	10.4	7.8	.06	.06	.04	-	.07	2.3	9.4	11.3
30	3.4	.04	8.7	7.6	.10	.08	.02	-	.06	5.0	6.2	10.7
31	5.6	.04	-	3.75	-	.04	.02	-	.02	-	4.7	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21.5	2.75	6.32	9.78	196	602
August	29	.01	5.15	7.97	160	490
September	14.0	.04	3.82	5.91	115	351
October	12.1	2.0	5.04	7.80	156	479
November	16.2	.02	4.01	6.20	120	369
December	.11	.02	.050	.077	1.56	4.8
Calendar year 1948	29	.01	3.41	5.28	1,250	3,830
January	.70	.02	.131	.203	4.07	12
February	10.0	.02	1.46	2.26	40.9	126
March	13.6	.02	2.18	3.37	67.4	207
April	13.0	.02	3.75	5.80	112	345
May	26.5	1.74	4.92	7.61	153	468
June	11.3	1.83	3.53	5.46	106	325
Fiscal year 1948-49	29	.01	3.37	5.21	1,230	3,780

Anahola ditch wasteway near Kealia

Location.--Sharp-crested weir, lat. 22°08'10", long. 159°22'30", 300 feet downstream from wasteway gates on Anahola ditch, 500 feet upstream from Kaneha Reservoir, 3.8 miles west of Anahola, and 4.9 miles northwest of Kealia. Datum of gage is 820 feet above mean sea level (hand levels from East Kauai Irrigation Co. bench mark).

Records available.--December 1936 to June 1949.

Average discharge.--12 years (1937-49), 3.24 million gallons a day (5.01 second-feet).

Extremes.--Maximum discharge during year, 106 million gallons a day (164 second-feet) Feb. 7 (gage height, 2.86 feet); no flow at times.
1936-49: Maximum discharge, 119 million gallons a day (184 second-feet) Apr. 1, 1948 (gage height, 3.08 feet); no flow at times.

Remarks.--Records good. Water that passes station is returned to Anahola River.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0.06	11.7	0.19	0.06	18.5	6.6	3.8	16.5	7.9	0.13	0.19
2	.18	0	6.2	.06	0	6.8	6.2	2.0	15.3	3.6	0	.06
3	.21	.06	14.3	.06	.13	5.2	6.4	.32	8.5	3.25	0	0
4	0	.06	4.9	0	.13	8.9	4.7	.31	4.4	2.95	0	0
5	0	.42	4.4	.06	.06	6.8	4.9	.43	3.8	.95	0	0
6	.24	0	3.95	0	0	6.0	8.8	.38	3.25	.26	0	0
7	.06	0	8.8	0	.99	8.5	10.0	48	20	.26	0	0
8	.06	0	1.36	0	.19	12.0	29.5	37	12.8	.26	0	0
9	.13	0	.32	0	0	12.6	13.0	31.5	5.3	.26	0	0
10	.13	.03	.32	0	.61	20.5	9.9	19.4	4.4	.32	0	0
11	.13	.13	.32	0	.47	14.0	6.2	10.4	3.8	.26	0	0
12	1.10	.21	.32	0	.13	11.2	9.9	7.7	8.4	.19	0	0
13	.32	.39	.26	0	.24	10.6	5.3	12.5	5.9	.13	.03	0
14	.13	0	.26	.06	0	11.3	4.4	6.8	3.6	.19	.13	0
15	.71	0	.26	.06	.06	14.4	10.7	8.7	3.25	.19	.06	0
16	.10	3.85	.26	.06	.06	7.3	38	8.1	2.8	.13	.19	0
17	0	25.5	.26	.13	4.4	8.9	35	5.5	.89	.13	7.7	0
18	0	18.2	.19	.13	7.6	6.0	36	4.7	.26	.06	.38	0
19	0	13.4	.19	.13	10.2	7.6	37	4.5	.32	.06	.32	0
20	.06	16.1	.19	.46	5.3	14.8	38.5	3.95	.32	.06	.26	.06
21	.06	7.1	.19	.19	4.5	10.4	16.9	3.8	.13	.06	.26	.06
22	.19	5.5	.19	.30	7.4	8.7	10.4	3.8	.26	.22	.26	.06
23	0	2.7	.19	.13	9.5	10.0	8.2	4.5	.19	.19	.26	0
24	0	1.82	.21	.19	10.1	11.7	7.1	3.4	.13	.13	.19	0
25	0	13.2	.13	.06	5.7	6.0	6.0	3.1	.19	.06	.26	0
26	0	15.1	.19	.06	21	5.5	11.1	3.6	3.5	.13	.06	0
27	.06	14.2	.45	0	18.4	10.0	11.1	4.7	3.8	.13	.13	0
28	.06	31	.26	.19	9.2	17.1	5.5	16.6	5.4	.06	.32	.02
29	0	13.3	.34	.13	9.5	14.6	4.7	-	7.7	.06	.13	.13
30	.06	11.8	.19	.19	15.2	17.1	4.2	-	11.5	.06	.06	.13
31	.13	6.4	-	.13	-	8.2	3.95	-	3.8	-	.19	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.10	0	0.133	0.206	4.12	13
August	31	0	6.47	10.0	201	615
September	14.3	.13	2.04	3.16	61.1	188
October	.46	0	.096	.149	2.97	9.1
November	21	0	4.70	7.27	141	433
December	20.5	5.2	10.7	16.6	331	1,020
Calendar year 1948	33	0	4.48	6.93	1,640	5,050
January	38.5	3.95	13.2	20.4	410	1,260
February	48	.31	9.27	14.3	259	796
March	20	.13	5.17	8.00	160	492
April	7.9	.06	.750	1.16	22.5	69
May	7.7	0	.365	.565	11.3	35
June	.19	0	.024	.037	.71	2.2
Fiscal year 1948-49	48	0	4.40	6.81	1,600	4,930

Lower Anahola ditch near Kealia

Location.--Parshall flume, lat. 22°08'00", long. 159°19'30", 100 feet downstream from last wasteway, 1.3 miles southwest of mouth of Anahola River, and 2.5 miles northwest of Kealia. Datum of gage, 276.11 feet above mean sea level (Highway Department bench mark).

Records available.--December 1936 to June 1949. Records collected by East Kauai Water Co. July 1925 to January 1935 at site half a mile downstream and January 1935 to December 1936 at present site.

Average discharge.--12 years (1937-49), 2.57 million gallons a day (3.98 second-feet).

Extremes.--Maximum discharge during year, 8.0 million gallons a day (12.4 second-feet) May 25 (gage height, 1.30 feet); no flow for many days.
1936-49: Maximum discharge, 16.5 million gallons a day (25.5 second-feet) Apr. 19, 1937 (gage height, 2.11 feet); no flow at times.

Remarks.--Records excellent. Ditch diverts water from Anahola River for irrigation of sugarcane.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.9	4.4	0	3.65	2.7			0		0	0.01	0
2	4.3	4.1	0	4.2	2.6			0		0	1.42	0
3	4.3	4.1	0	4.8	2.8			0		0	3.0	0
4	4.2	4.2	0	4.6	2.7			0		0	3.75	0
5	4.6	4.9	0	4.1	2.8			0		0	3.65	0
6	4.5	4.6	0	4.1	2.6			0		0	3.6	1.78
7	4.2	4.4	0	4.0	3.15			.02		0	3.65	4.5
8	4.1	4.0	3.25	3.65	3.9			0		0	3.5	4.5
9	4.0	3.75	4.0	3.35	3.1			0		0	3.5	4.3
10	4.1	3.8	4.3	3.3	3.0			0		0	3.35	4.1
11	4.2	3.8	4.1	3.2	1.46			0		0	3.3	4.2
12	4.8	4.4	4.1	3.1	.02			0		0	3.2	4.2
13	4.6	4.7	4.1	3.15	.02			0		0	3.35	4.6
14	4.1	4.1	3.9	3.35	.02			0		0	2.15	4.5
15	4.3	3.9	3.8	3.2	.02			0		0	0	4.2
16	4.4	2.45	3.9	3.6	.02			0		0	0	4.1
17	3.5	.03	4.0	3.45	.02			0		0	0	3.8
18	3.1	.03	3.8	3.6	.02			0		0	0	3.75
19	4.3	3.95	3.8	3.45	.02			0		1.49	3.7	3.75
20	4.1	5.5	3.8	3.6	.02			0		4.0	5.1	3.15
21	4.1	5.4	3.75	3.75	.02			0		4.2	4.7	0
22	4.4	5.3	3.75	3.5	.02			0		4.7	4.5	0
23	4.8	5.4	3.9	3.65	.01			0		5.7	4.2	0
24	4.6	5.7	3.75	3.6	.01			0		5.6	4.2	0
25	4.8	5.8	3.75	3.6	0			0		3.35	1.94	0
26	4.8	5.6	3.65	3.3	0			0		0	0	0
27	4.2	5.6	3.75	3.3	0			0		0	0	0
28	4.1	2.35	4.1	3.45	0			0		0	0	0
29	3.9	0	3.75	3.45	0			-		0	0	0
30	4.0	0	3.65	3.35	0			-		1.28	0	0
31	4.3	0	-	3.0	-			-		-	0	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.8	3.1	4.25	6.58	132	404
August	5.8	0	3.75	5.80	116	357
September	4.3	0	2.96	4.58	88.6	272
October	4.8	3.0	3.59	5.55	111	342
November	3.9	0	1.04	1.61	31.0	95
December	0	0	0	0	0	0
Calendar year 1948	5.8	0	1.94	3.00	709	2,180
January	0	0	0	0	0	0
February	.02	0	.001	.002	.02	.1
March	0	0	0	0	0	0
April	5.7	0	1.01	1.56	30.3	93
May	5.1	0	2.25	3.48	69.8	214
June	4.6	0	1.98	3.06	59.4	182
Fiscal year 1948-49	5.8	0	1.75	2.71	638	1,960

Ka Loko ditch near Kilauea

Location.--Parshall flume, lat. 22°10'35", long. 159°23'00", 60 feet downstream from confluence of Ka Loko and Moloaa ditches, 400 feet upstream from Ka Loko Reservoir, and 3½ miles southeast of Kilauea. Altitude of gage, 750 feet (from topographic map).

Records available.--August 1932 to June 1949.

Average discharge.--16 years (1933-49), 3.73 million gallons a day (5.77 second-feet).

Extremes.--Maximum discharge during year, 78 million gallons a day (121 second-feet) Aug. 16 (gage height, 3.63 feet); minimum, 0.88 million gallons a day (1.36 second-feet) Oct. 25, Nov. 6.
1932-49: Maximum discharge, 108 million gallons a day (167 second-feet) Jan. 2, 1933 (gage height, 4.41 feet); minimum, 0.19 million gallons a day (0.29 second-foot) May 24, 1933.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts water from Moloaa and Puu Ka Ele Streams, half a mile southeast and 1½ miles southwest of station, respectively. Water used for irrigation in vicinity of Kilauea.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.15	2.0	4.8	1.85	0.95	6.5	2.65	3.1	5.7	3.4	3.2	2.45
2	3.9	1.8	3.45	1.54	.95	3.3	2.65	3.55	2.9	2.25	1.89	2.25
3	4.2	1.9	4.5	1.39	1.39	2.9	2.75	3.45	1.74	2.15	1.80	2.15
4	2.65	2.1	3.05	1.31	1.09	3.0	2.25	3.55	2.95	1.98	1.71	2.15
5	2.25	4.5	2.65	1.54	1.02	3.1	2.15	5.0	3.55	1.98	1.71	2.15
6	3.45	2.1	2.75	1.31	.95	2.8	4.0	5.2	3.35	1.89	1.63	1.98
7	2.25	2.2	3.55	1.23	7.5	3.05	2.65	23	9.2	1.98	1.71	1.89
8	2.7	1.8	2.45	1.16	3.35	4.6	20.5	9.8	5.8	1.80	1.63	1.89
9	2.4	1.7	2.35	1.09	1.54	4.9	5.4	6.2	3.8	1.54	1.54	1.80
10	2.5	1.9	2.15	1.02	3.2	7.5	5.9	7.3	3.35	2.8	1.54	1.71
11	2.2	2.2	2.05	1.02	7.5	4.3	3.55	7.3	3.25	3.15	1.54	1.89
12	7.0	4.0	1.98	.95	2.5	4.2	5.9	6.6	3.8	2.05	1.54	1.98
13	3.5	2.1	1.89	1.19	3.5	4.0	3.15	6.3	3.6	1.71	1.77	1.98
14	2.4	1.9	1.89	1.09	2.3	4.4	2.75	5.5	3.05	2.0	2.1	1.71
15	6.0	30	1.71	1.02	1.8	4.4	6.0	5.5	2.85	2.55	1.63	1.71
16	2.7	28	1.80	1.81	1.6	2.95	33.5	5.1	2.75	1.71	2.25	1.63
17	2.8	7.0	2.35	1.23	5.0	3.6	25.5	4.6	2.75	1.71	11.5	1.54
18	2.3	5.0	1.98	1.39	3.0	2.75	19.4	4.6	2.65	1.71	2.45	1.54
19	2.2	4.9	1.71	1.16	3.0	3.0	9.7	5.0	4.2	1.63	1.80	1.54
20	2.5	5.4	1.89	3.05	2.0	4.1	10.7	5,0	6.9	1.54	1.63	2.5
21	2.1	3.25	1.63	1.23	1.5	5.0	7.5	5.0	3.15	1.76	1.54	3.5
22	2.4	2.95	1.71	1.94	2.5	3.15	7.6	5.0	4.6	3.2	1.47	1.98
23	2.2	2.55	2.35	1.80	3.3	2.85	6.0	4.5	3.45	2.85	1.39	3.75
24	2.2	7.8	2.65	2.35	3.0	2.95	5.2	3.5	2.75	2.7	1.39	1.89
25	2.0	8.8	1.80	1.31	2.6	2.45	4.7	3.5	2.75	1.98	8.8	1.71
26	1.9	7.0	2.65	1.76	8.0	2.35	5.7	3.7	3.15	1.89	2.5	1.54
27	2.0	8.3	4.4	1.31	6.0	3.55	4.8	3.85	2.55	1.89	2.85	1.47
28	1.9	22.5	3.2	1.80	3.2	5.9	3.7	3.75	2.75	1.71	19.9	1.71
29	1.8	6.7	2.8	1.54	3.0	4.4	3.25	-	2.55	1.71	5.4	3.7
30	1.9	5.5	1.9	1.54	5.2	5.0	3.05	-	5.7	2.3	3.45	3.3
31	2.1	4.0	-	1.16	-	3.05	2.85	-	2.45	-	2.95	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	7.0	1.8	2.73	4.22	84.6	259
August	30	1.7	6.19	9.58	192	589
September	4.8	1.63	2.53	3.91	76.0	233
October	3.05	.95	1.45	2.24	45.1	138
November	8.0	.95	3.08	4.77	92.4	284
December	7.5	2.35	3.87	5.99	120	368
Calendar year 1948	30	.68	3.49	5.40	1,280	3,920
January	33.5	2.15	7.27	11.2	225	692
February	23	3.1	5.66	8.76	158	486
March	9.2	1.74	3.68	5.69	114	350
April	3.4	1.54	2.12	3.28	63.5	195
May	19.9	1.39	3.17	4.90	98.2	301
June	3.75	1.47	2.10	3.25	63.0	193
Fiscal year 1948-49	33.5	.95	3.65	5.65	1,330	4,090

Note.--No gage-height record July 9 to Aug. 18, Sept. 29, 30, Nov. 10 to Dec. 6, Feb. 18-25; discharge computed on basis of records for nearby streams and ditches.

Puu Ka Ele ditch near Kilauea

Location.--Parshall flume, lat. 22°11'05", long. 159°24'20", 100 feet upstream from Puu Ka Ele Reservoir and 2 miles south of Kilauea. Altitude of gage, 430 feet (by barometer).

Records available.--August 1932 to June 1949.

Average discharge.--16 years (1933-49), 3.14 million gallons a day (4.86 second-feet).

Extremes.--Maximum discharge during year, 31 million gallons a day (48 second-feet) Aug. 16 (gage height, 1.99 feet); no flow at times.
1932-49: Maximum discharge, 38 million gallons a day (59 second-feet) May 7, 1943 (gage height, 2.28 feet); no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts water from Puu Ka Ele Stream, 1 mile southwest of station. Water used for irrigation in vicinity of Kilauea.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			4.4	4.1			0	0		3.45	2.45	2.65
2			4.1	3.7			0			2.65	1.98	2.55
3		a2.7	5.1	3.45	a0.9		0	a0	a1.5		1.80	2.45
4	a2.8		4.6	3.25			0				1.71	2.45
5			4.9	3.7			0				1.71	2.25
6			4.5	3.25			0	0			1.71	2.05
7			5.1	2.95			.17	3.8			1.80	1.89
8	5.0	a2.4	3.7	2.95	a5.0		1.44	1.78	a1.0		1.63	1.89
9	3.05			2.75			0	.94			1.54	1.80
10	2.75			2.65			0	.27			1.54	1.80
11	2.45			2.65			0	0	3.35	a2.4	1.54	1.98
12	6.3	a3.5		2.55			0	0	3.55		1.54	1.98
13	3.25			2.8	a4.0		0	0	3.7		1.74	1.80
14	2.65	2.45		2.75			0	0	3.35		2.05	1.71
15	7.6	2.15		2.55			.08	0	3.25		1.71	1.71
16	4.0	7.9	a3.3	4.2			2.35	0	3.05		1.84	1.54
17	4.2	12.8					1.63	0	2.75		9.1	1.47
18	2.95	1.01			a2.5		2.25	0	2.65		2.6	1.47
19	2.75	.16		a4.8			1.56	0	3.45		1.98	1.39
20	2.95	.50					2.2	0	5.2		1.71	1.87
21	2.55	3.8					.19	0	3.05	2.35		2.55
22	2.35	5.2			a1.0		0	a0	4.0	2.55	a1.5	1.66
23	2.25	4.9					0		3.8	2.8		2.6
24		10.3					0	a1.5	3.15	2.45		1.63
25		9.1					0		3.15	2.05		1.39
26		4.5	a4.6	a.2	a0		0		3.8	1.98	a8.0	1.39
27	a1,9	5.7					0	a2.4	2.95	1.89		1.31
28		6.2					0		3.05	1.89		1.47
29		.82			0		0	-	2.9	1.80		2.6
30		4.5	4.3		0		0	-	6.3	1.89	a1.5	2.25
31		4.5	-		-		0	-	2.95	-		-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	-	-	2.96	4.58	91.8	282
August	-	-	3.95	6.11	122	376
September	-	-	3.97	6.14	119	366
October	-	-	2.46	3.81	76.2	234
November	-	0	2.20	3.40	66.0	203
December	0	0	0	0	0	0
Calendar year 1948	-	-	2.19	3.39	801	2,460
January	2.35	0	.383	.593	11.9	36
February	-	0	.660	1.02	18.5	57
March	-	-	2.77	4.29	85.9	264
April	-	-	2.37	3.67	71.2	219
May	-	-	2.78	4.30	86.2	264
June	2.65	1.31	1.92	2.97	57.6	177
Fiscal year 1948-49	-	-	2.21	3.42	806	2,480

a No gage-height record; discharge computed on basis of records for Ka Loko and Kalihiwai ditches, Anahola River, and ditchman's notes.

Kalihiwai ditch near Kilauea

Location.--Parshall flume, lat. 22°10'55", long. 159°25'55", 0.1 mile upstream from Kalihiwai Reservoir and 2.4 miles southwest of Kilauea. Altitude of gage, 410 feet (by barometer).

Records available.--June 1934 to June 1949.

Average discharge.--14 years (1934-42, 1943-49), 2.67 million gallons a day (4.13 second-feet).

Extremes.--Maximum discharge during year, 65 million gallons a day (101 second-feet) May 28 (gage height, 3.17 feet); no flow for several days in October and November.
1934-49: Maximum discharge, that of May 28, 1949; no flow at times in 1945, 1947, 1948.

Remarks.--Records good except those for period of no gage-height record, which are poor. Ditch diverts low-water flow from most branches of Pohakuhonu Stream at intakes, about 1 mile south of station. Diversion of flow to Kahililolo Stream, 0.1 mile above station. Water discharges into Kalihiwai Reservoir, where it is stored for irrigation in vicinity of Kilauea.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.15	1.63	3.9	3.8	0	0.46	0.16	3.25	1.47	4.0	2.75	2.85
2	2.9	1.54	3.8	3.45	0	.41	.16	2.3	.75	3.45	2.15	2.65
3	3.75	1.54	3.0	3.8	.15	.36	.16	.68	1.66	3.15	1.98	2.55
4	2.65	1.80	.88	3.15	1.50	.36	.16	.68	2.75	2.85	1.89	2.45
5	2.25	6.2	.81	3.85	2.85	.32	.16	.68	2.75	2.75	1.80	2.35
6	3.6	a2.5	.68	3.35	2.4	.32	.16	.68	2.65	2.65	1.71	2.15
7	3.25	a2.5	2.05	3.15	11.3	.27	.25	1.31	1.64	2.65	1.71	1.98
8	5.0	a2.2	3.15	2.85	7.4	.27	.39	.52	.63	2.45	1.63	1.98
9	3.8	a2.0	2.85	2.75	3.7	.36	.23	.46	.52	2.25	1.54	1.80
10	3.15	a2.2	2.75	2.65	7.0	.32	.27	.41	1.52	2.95	1.54	1.80
11	3.15	a2.5	2.55	2.55	12.7	.27	.23	.36	2.35	4.0	1.47	1.98
12	9.4	a3.5	2.45	2.45	2.75	.27	.23	3.05	2.45	3.15	1.47	1.98
13	5.2	a5.0	2.45	1.37	1.48	.27	.23	4.7	2.45	2.75	1.72	1.89
14	3.45	a2.5	2.35	0	2.35	.27	.23	3.8	2.15	3.2	1.71	1.71
15	7.2	a2.0	2.15	0	2.15	.27	.23	4.0	1.56	3.25	1.63	1.71
16	3.95	a13	2.5	0	2.7	.23	.43	2.75	2.25	2.55	1.71	1.63
17	4.9	a12	4.1	.03	3.75	.23	.33	.81	2.45	2.45	10.1	1.54
18	2.65	a6.5	3.25	.12	.68	.19	.39	.81	2.45	2.35	2.75	1.54
19	2.45	a5.5	3.05	.04	2.7	.19	.36	.75	2.75	2.25	1.98	1.54
20	2.65	6.2	3.8	.21	4.1	.19	.44	.75	2.6	2.45	1.71	1.71
21	2.25	4.4	2.95	0	3.55	.19	1.19	.75	2.75	2.4	1.54	1.80
22	2.2	3.2	3.35	0	2.35	.19	1.89	.75	3.15	3.2	1.54	2.1
23	2.05	2.45	4.1	0	.46	.19	1.47	1.58	2.75	3.9	1.39	2.95
24	1.98	3.25	7.0	0	.27	.19	2.7	2.35	2.55	3.95	1.39	1.71
25	1.89	2.5	4.4	0	.27	.19	5.4	2.25	2.55	2.65	13.3	1.71
26	1.89	.88	4.3	0	.57	.16	5.2	2.25	2.65	2.45	3.05	1.73
27	1.89	.81	5.0	0	.36	.16	5.4	2.25	3.2	2.45	2.75	1.47
28	1.71	1.02	5.9	0	.32	.16	4.4	1.72	3.8	2.15	13.4	1.63
29	1.63	.81	4.6	0	.36	.16	3.9	-	3.9	1.98	1.09	2.95
30	1.71	.81	3.9	0	.36	.16	3.8	-	5.1	2.25	3.0	2.75
31	1.71	2.4	-	0	-	.16	3.45	-	3.8	-	3.35	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	9.4	1.63	3.17	4.90	98.4	302
August	13	.81	3.40	5.26	105	323
September	7.0	.68	3.27	5.06	98.0	301
October	3.85	0	1.28	1.98	39.6	121
November	12.7	0	2.68	4.15	80.5	247
December	.46	.16	.250	.387	7.74	24
Calendar year 1948	13	0	2.44	3.78	891	2,740
January	5.4	.16	1.42	2.20	44.0	135
February	4.7	.36	1.67	2.58	46.6	143
March	5.1	.52	2.45	3.79	76.0	233
April	4.0	1.98	2.83	4.38	84.9	261
May	13.4	1.09	2.93	4.53	90.8	279
June	2.95	1.47	2.02	3.13	60.6	186
Fiscal year 1948-49	13.4	0	2.28	3.53	832	2,560

a No gage-height record; discharge computed on basis of records for nearby streams.

Hanalei River at altitude 625 feet, near Hanalei

Location.--Lat. 22°07'10", long. 159°28'05", 0.4 mile downstream from confluence with Kaapoko Stream and 6¼ miles southeast of Hanalei. Altitude of gage, 625 feet (from topographic map).

Drainage area.--7.4 square miles.

Records available.--January 1914 to June 1949.

Average discharge.--31 years (1918-49), 46.6 million gallons a day (72.1 second-feet).

Extremes.--Maximum discharge during year, 7,200 million gallons a day (11,100 second-feet) Jan. 19 (gage height, 9.03 feet), from rating curve extended above 200 million gallons a day; minimum, 9.1 million gallons a day (14.1 second-feet) May 12.
1914-49: Maximum discharge, 13,800 million gallons a day (21,400 second-feet) Apr. 1, 1948 (gage height, 11.20 feet), from rating curve extended above 200 million gallons a day; minimum, 5.8 million gallons a day (9.0 second-feet) Apr. 28, May 1-3, 1926.

Remarks.--Records good. Since 1925 Hanalei tunnel has been diverting an average of about 25 million gallons of water a day from Hanalei River and its tributary Kaapoko Stream at points about 2 miles above station, for irrigation in vicinity of Lihue.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to May 16						May 17 to June 30			
0.5	9.3	1.4	59	3.5	452	0.5	14.0	1.4	66
.6	12.2	2.0	129	4.0	660	.6	17.5	2.0	133
.8	19.5	2.5	212	4.5	890	.8	25.9	2.5	213
1.1	35.5	3.0	318	5.0	1,220	1.1	43.5		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	22	14.2	50	33	20	322	32.5	41	140	47	35.5	22
2	55	13.5	39	32.5	19.5	60	68	41	111	43	29	19.8
3	74	14.8	84	30.5	25.5	39	41	39.5	71	37.5	28.5	19.4
4	37	50	34.5	25.5	17.9	60	24	39	42	35	27.5	19.4
5	33	169	30.5	52	17.1	61	36	39.5	38	34.5	27	18.7
6	35	18.7	36.5	27	15.2	58	43	63	35.5	33	25.5	17.2
7	27	25.5	124	24	59	35	91	1,350	108	32.5	34	16.4
8	49	14.8	37	22.5	22.5	44	172	590	87	30.5	26	16.4
9	52	14.2	29.5	20.5	15.9	128	56	247	45	29.5	20	15.8
10	25.5	16.1	27.5	19.5	34	163	57	112	39.5	40	9.9	15.0
11	21.5	43	26	19.1	54	69	31	74	37	59	9.6	21.5
12	110	43	28	18.7	97	60	28	60	110	47	9.3	16.4
13	65	124	24.5	19.1	70	95	34	94	79	35.5	31.5	19.6
14	24.5	22.5	22.5	17.5	23	81	21.5	59	41	41	25	17.2
15	85	21	22	14.8	25.5	168	72	74	39.5	38	11.3	17.5
16	34.5	175	22	16.9	22.5	40	370	72	36	30.5	28.5	24
17	47	212	23	31.5	52	55	578	53	34.5	30	233	15.0
18	32	254	22	14.5	22.5	36	754	44	33.5	31.5	31	16.4
19	24.5	86	22	12.9	28	38	490	41	59	34	23.5	15.8
20	23.5	79	23	51	18.7	87	491	38	59	34.5	21	47
21	23.5	41	17.5	17.7	17.1	95	170	37	37	29	20	73
22	40	34.5	42	43	44	60	116	36	137	88	21.5	63
23	20.5	30	50	41	65	64	79	37	87	95	18.7	48
24	17.5	268	53	32	49	100	64	33.5	69	93	17.9	22.5
25	16.7	226	42	22	32	59	55	32.5	81	40	24	39
26	15.9	163	33.5	29.5	234	34.5	69	42	77	37	43	27
27	15.9	112	109	47	131	55	157	40	50	33.5	31.5	19.1
28	11.9	343	92	62	61	87	58	46	100	31.5	106	23.2
29	14.5	103	43	55	89	68	48	-	62	30	42	48
30	14.5	64	36	55	109	84	45	-	74	38.5	30	53
31	15.9	45	-	28	-	43	43	-	44	-	25.5	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	110	11.9	35.0	54.2	1,080	3,330
August	343	13.5	91.6	142	2,840	8,720
September	124	17.5	41.5	64.2	1,250	3,820
October	62	12.9	30.2	46.7	935	2,870
November	234	15.2	49.7	76.9	1,490	4,580
December	322	34.5	79.0	122	2,450	7,510
Calendar year 1948	590	11.9	67.9	105	24,840	76,250
January	754	21.5	142	220	4,390	13,480
February	1,350	32.5	124	192	3,480	10,660
March	140	33.5	66.6	103	2,060	6,330
April	95	29	42.0	65.0	1,260	3,860
May	233	9.3	34.4	53.2	1,070	3,270
June	73	15.0	26.9	41.6	806	2,470
Fiscal year 1948-49	1,350	9.3	63.3	97.9	23,110	70,900

Peak discharge (base, 2,000 m.g.d.).--Aug. 18 (1 p.m.) 3,380 m.g.d. (5,230 sec.-ft.); Aug. 24 (2 p.m.) 2,200 m.g.d. (3,400 sec.-ft.); Jan. 19 (1 a.m.) 7,200 m.g.d. (11,100 sec.-ft.); Feb. 7 (2 p.m.) 5,940 m.g.d. (9,190 sec.-ft.).

Hanakapiai Stream near Hanalei

Location.--Lat. 22°11'20", long. 159°35'50", 1½ miles upstream from mouth and 6 miles west of Hanalei. Altitude of gage, 450 feet (by barometer).

Drainage area.--2.6 square miles.

Records available.--December 1931 to June 1949.

Average discharge.--17 years (1932-49), 11.0 million gallons a day (17.0 second-feet).

Extremes.--Maximum discharge during year, about 1,000 million gallons a day (1,550 second-feet) Feb. 7, on basis of records for Kawaikoi Stream; minimum, 3.2 million gallons a day (4.95 second-feet) Oct. 19.
1931-49: Maximum discharge, 2,680 million gallons a day (4,150 second-feet) Dec. 23, 1937 (gage height, 8.41 feet), from rating curve extended above 60 million gallons a day; minimum, 1.50 million gallons a day (2.32 second-feet) Oct. 14, 15, 1945.

Remarks.--Records good except those for periods of faulty or no gage-height record, which are poor. No diversions.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.6	7.4	5.1	13.9	9.6	47	14	5	16	8.3	12.7	3.9
2	6.4	7.3	4.6	11.4	26.5	15.8	11	5	14	8.0	7.0	3.9
3	5.5	6.5	7.7	12.3	25	10.6	10	5	9	8.7	5.6	3.9
4	6.7	6.1	4.6	7.2	9.5	9	9	4	6	6.3	5.0	3.9
5	11.3	5.3	4.2	6.4	7.4	12	9	4	5	6.0	4.6	3.75
6	19.1	5.1	4.0	5.7	5.8	14	33	5	5	5.6	4.2	3.6
7	10.6	4.8	5.5	5.3	34.5	9	18	190	29	5.8	4.2	3.6
8	11.8	4.8	4.5	4.8	18.0	18	47	37	34	5.3	4.0	3.8
9	8.8	4.6	3.9	4.2	8.5	110	20	40	10	5.1	3.9	3.6
10	6.4	4.5	3.75	4.0	11.5	54	42	19	6	9.7	3.9	3.5
11	8.1	5.5	3.6	4.0	25.5	25	17	13	6	27	3.9	3.5
12	33	8.2	4.0	3.9	11.6	30	15	11	35	12.1	3.7	3.6
13	9.9	19.6	8.2	6.9	18.8	39	15	11	22	10.7	5.6	3.6
14	6.6	6.5	4.5	5.6	7.6	20	15	9	9	11.1	4.7	3.4
15	28.5	5.3	4.0	3.9	8.6	21	50	9	7	7.9	4.2	3.4
16	12.6	12.6	3.6	3.6	10.7	14	100	14	6	6.0	5.0	3.4
17	33	6.3	3.75	3.45	34	20	68	9	5.5	5.6	29	3.3
18	22.5	5.5	7.9	3.3	8.7	15	53	8	5.4	5.5	6.0	3.3
19	12.2	4.8	7.1	3.2	6.6	13	68	7	10.0	5.3	4.6	3.4
20	12.3	5.9	4.2	25.5	6.4	27	66	6	10.1	5.3	4.0	4.3
21	7.7	4.8	3.9	10.1	5.1	25	20	6	5.9	5.3	3.7	14.5
22	8.6	4.2	3.75	29.5	5.4	21	16	5	27.5	24.5	3.7	7.6
23	7.4	4.0	3.75	19.1	15.9	38	13	6	16.0	30.5	3.7	10.1
24	6.1	4.0	3.9	14.4	9.5	45	12	5	12.1	25	4.0	4.4
25	5.6	4.0	3.75	10.9	7.7	24	10	5	13.9	9.8	10.8	4.0
26	5.6	4.0	4.1	13.3	13.7	15	9	5	15.8	25.5	6.2	4.2
27	5.5	4.3	17.5	20.5	41	16	35	5	7.6	14.3	5.1	3.9
28	5.1	29.5	29	17.6	17.2	24	9.8	5	15.3	7.6	14.7	4.1
29	5.0	14.5	13.4	17.0	26	50	7.4	-	10.2	6.4	6.1	8.5
30	6.2	7.5	16.7	18.0	22	53	6.4	-	15.5	13.7	4.5	7.5
31	9.8	5.5	-	21.5	-	20	6	-	7.7	-	4.0	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	33	5.0	11.1	17.2	344	1,050
August	29.5	4.0	7.19	11.1	223	684
September	29	3.6	6.62	10.2	198	609
October	29.5	3.2	10.7	16.6	330	1,010
November	41	5.1	15.3	23.7	458	1,410
December	110	9	27.6	42.7	854	2,620
Calendar year 1948	115	3.2	14.5	22.4	5,310	16,290
January	100	6	26.6	41.2	825	2,530
February	190	4	16.2	25.1	453	1,390
March	35	5	12.8	19.8	398	1,220
April	30.5	5.1	10.9	16.9	328	1,010
May	29	3.7	6.20	9.59	192	590
June	14.5	3.3	4.72	7.30	141	434
Fiscal year 1948-49	190	3.2	13.0	20.1	4,740	14,560

Peak discharge (base, 400 m.g.d.).--Jan. 17 (about 10 a.m.) about 500 m.g.d. (774 sec.-ft.); Feb. 7 (about 2 p.m.) about 1,000 m.g.d. (1,550 sec.-ft.).
Note.--Faulty or no gage-height record Dec. 4 to Jan. 26, Jan. 31 to Mar. 16, May 9-12, 21-23, June 6-19; discharge computed on basis of records for Kalalau, Mohihi, and Kawaikoi Streams.

Hanakoa Stream near Hanalei

Location.--Lat. 22°11'00", long. 159°37'35", three-quarters of a mile upstream from mouth and 8 miles (corrected) west of Hanalei. Altitude of gage, 470 feet (by barometer).

Drainage area.--1.1 square miles.

Records available.--December 1931 to June 1949.

Average discharge.--17 years (1932-49), 3.60 million gallons a day (5.57 second-feet).

Extremes.--Maximum discharge during year, 234 million gallons a day (362 second-feet) probably Feb. 7 (gage height, about 3.9 feet), from rating curve extended above 30 million gallons a day; minimum, 0.37 million gallons a day (0.57 second-foot) Sept. 26.
1931-49: Maximum discharge, 687 million gallons a day (1,060 second-feet) Dec. 21, 1946 (gage height, 5.98 feet), from rating curve extended above 30 million gallons a day; minimum, 0.17 million gallons a day (0.26 second-foot) Mar. 21, 22, 1934.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversions.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.0	0.53	1.4	6.32	2.1	31.8
1.1	1.29	1.5	8.95	2.4	49
1.2	2.48	1.7	15.3	2.8	80
1.3	4.13	1.9	22.7		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.87	1.11	0.72	3.0	3.25	24	4	1.29	4	1.57	2.85	0.65
2	.87	1.03	.65	2.5	11.0	6.2	2.8	1.29	3	1.47	1.47	.65
3	.72	1.20	.93	2.9	11.4	3.4	2.3	1.2	1.6	1.68	1.29	.65
4	1.20	.87	.59	1.57	3.4	2.5	2.0	1.2	1.1	1.20	1.11	.65
5	1.57	.95	.53	1.38	2.5	2.75	2.2	1.2	1.1	1.11	1.03	.59
6	4.6	.72	.47	1.03	1.79	2.5	11	1.2	1.1	.95	.87	.53
7	2.05	.72	.59	.95	21	2.15	5	96	10	1.03	.87	.53
8	2.35	.72	.53	.79	8.1	4.0	19	14	12	.87	.87	.59
9	1.38	.65	.42	.65	3.05	53	6	15	1.8	.79	.79	.53
10	1.11	.65	.42	.65	3.3	20.5	16	5	1.2	7.1	.79	.47
11	1.18	.79	.42	.65	11.0	8.6	5	2.9	1.1	7.5	.79	.47
12	6.3	1.11	.47	.59	3.85	7.9	4	2.1	14	2.35	.72	.53
13	1.79	4.2	1.44	1.14	5.4	15.5	4	2.1	7	2.2	.95	.53
14	1.20	1.03	.65	.95	2.3	6.2	4	1.8	1.6	1.91	.87	.47
15	9.4	.79	.47	.59	2.6	4.7	20	1.7	1.3	1.47	.79	.47
16	2.7	1.63	.42	.53	2.95	3.25	47	3	1.2	1.11	1.18	.47
17	13.4	.87	.42	.53	14.9	6.0	30	1.7	1.2	1.03	13.8	.42
18	8.1	.79	1.10	.47	2.9	4.3	22	1.3	1.1	.95	1.38	.42
19	3.05	.72	1.13	.42	1.91	3.25	30	1.3	1.79	.87	.95	.47
20	2.85	.87	.59	6.3	1.68	6	29	1.2	1.58	.79	.79	.65
21	1.68	.65	.47	1.97	1.38	5	6	1.1	1.03	.79	.72	4.7
22	1.57	.59	.42	11.8	1.38	4	4	1.1	9.7	5.7	.72	1.35
23	1.29	.53	.42	7.0	5.1	14	2.9	1.1	4.2	9.5	.72	1.81
24	1.11	.53	.42	4.3	2.3	18	2.4	1.1	2.8	8.2	.79	.72
25	.95	.53	.42	3.05	1.91	8	1.9	1.1	3.4	2.15	1.47	.72
26	.95	.53	.42	3.9	2.8	4	1.7	1.1	4.9	7.3	.72	.72
27	.87	.59	4.1	8.5	17.1	4	17	1.1	1.68	3.95	.72	.53
28	.79	4.9	10.0	6.6	6.5	7	3	1.1	3.3	1.68	2.55	.65
29	.79	2.35	2.3	5.2	13.6	20	1.79	-	2.15	1.47	.95	1.57
30	1.03	1.11	3.05	6.9	9.0	22	1.57	-	3.25	3.55	.72	1.20
31	1.81	.79	-	8.9	-	6	1.47	-	1.57	-	.65	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	13.4	0.72	2.57	3.98	79.5	244
August	4.9	.53	1.11	1.72	34.5	106
September	10.0	.42	1.17	1.81	35.0	107
October	11.8	.42	3.09	4.78	95.7	294
November	21	1.38	5.98	9.25	179	550
December	53	2.15	9.64	14.9	299	917
Calendar year 1948	74	.42	4.71	7.29	1,720	5,280
January	47	1.47	9.97	15.4	309	948
February	96	1.1	5.90	9.13	165	507
March	14	1.03	3.44	5.32	107	328
April	9.5	.79	2.74	4.24	82.2	252
May	13.8	.65	1.45	2.24	44.9	138
June	4.7	.42	.824	1.27	24.7	76
Fiscal year 1948-49	96	.42	3.99	6.17	1,460	4,470

Peak discharge (base, 220 m.g.d.).--Probably Feb. 7, 234 m.g.d. (362 sec.-ft.).
Note.--No gage-height record Dec. 20 to Jan. 28, Feb. 3 to Mar. 18; discharge computed on basis of records for Mohihi, Kalalau, and Kawaikoi Streams.

Kalalau Stream near Hanalei

Location.--Lat. 22°09'50", long. 159°38'15", 2 miles upstream from mouth and 9 miles southwest of Hanalei. Altitude of gage, 960 feet (by barometer).

Drainage area.--1.6 square miles.

Records available.--November 1931 to June 1949.

Average discharge.--17 years (1932-49), 4.50 million gallons a day (6.96 second-feet).

Extremes.--Maximum discharge during year, 620 million gallons a day (959 second-feet) Feb. 7 (gage height, 4.46 feet), from rating curve extended above 18 million gallons a day; minimum, 3.2 million gallons a day (5.0 second-feet) Oct. 9-21.
1931-49: Maximum discharge, that of Feb. 7, 1949; minimum, 1.73 million gallons a day (2.68 second-feet) June 2, 1945.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversions.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.1	3.19	1.5	11.5	2.3	59
1.2	4.60	1.6	14.9	2.6	92
1.3	6.40	1.8	23.5	3.0	153
1.4	8.70	2.0	35		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.1	5.0	4.5	3.75	3.75	8.9	4.6	3.9	4	3.45	3.75	3.45
2	5.1	5.0	4.5	3.75	4.0	6.4	4.2	3.75	3.5	3.45	3.6	3.45
3	5.1	5.0	4.5	3.75	4.6	4.8	3.9	3.6	3.4	3.45	3.45	3.6
4	5.1	5.0	4.3	3.75	3.9	4.2	3.75	3.45	3.4	3.45	3.45	3.6
5	5.1	5.0	4.3	3.6	3.6	3.9	3.6	3.45	3.4	3.45	3.45	3.6
6	5.5	5.0	4.3	3.6	3.45	3.75	7.1	4.3	4	3.35	3.35	3.6
7	5.3	5.0	4.3	3.45	8.2	3.6	5.3	157	6	3.35	3.35	3.6
8	5.3	5.0	4.3	3.35	6.6	3.6	16.8	50	4	3.35	3.35	3.6
9	5.1	4.8	4.3	3.2	4.8	22	7.1	15	3.5	3.35	3.35	3.6
10	5.0	4.8	4.2	3.2	4.5	11.1	11.2	5	3.5	3.45	3.35	3.6
11	5.0	4.8	4.0	3.2	5.3	6.8	7.6	4.5	4	4.2	3.35	3.6
12	5.3	4.8	4.0	3.2	4.5	5.5	6.0	4	7	3.75	3.35	3.6
13	5.1	5.0	4.2	3.2	4.0	6.6	5.5	3.7	4	3.75	3.45	3.6
14	5.1	4.8	4.0	3.2	3.9	5.7	5.1	3.6	3.5	3.6	3.45	3.6
15	5.8	4.8	4.0	3.2	3.75	5.0	13.0	3.5	3.5	3.45	3.35	3.6
16	5.5	4.8	4.0	3.2	3.75	4.3	48	3.5	3.45	3.45	3.6	3.6
17	6.9	4.8	3.9	3.2	5.1	4.2	32	3.5	3.45	3.45	12.8	3.6
18	7.6	4.8	3.9	3.2	4.2	4.2	23.5	3.4	3.45	3.45	5.2	3.6
19	6.2	4.8	3.9	3.2	3.9	4.0	25	3.4	3.45	3.45	4.2	3.6
20	5.9	4.8	3.9	3.35	3.75	4.3	35	3.4	3.45	3.45	3.9	3.6
21	5.3	4.8	3.9	3.35	3.6	4.6	10.2	3.4	3.35	3.45	3.6	3.75
22	5.3	4.6	3.9	4.0	3.45	4.5	6.9	3.4	4.1	3.6	3.6	3.75
23	5.3	4.8	3.9	4.2	3.6	5.0	5.9	3.4	3.9	3.9	3.6	3.75
24	5.1	4.8	3.75	3.75	3.45	6.4	5.0	3.4	3.75	4.2	3.6	3.75
25	5.1	4.8	3.75	3.6	3.35	5.5	4.5	3.4	3.75	3.75	3.75	3.75
26	5.1	4.8	3.75	3.6	3.35	4.6	4.3	3.4	4.0	4.2	3.6	3.75
27	5.1	4.8	3.9	4.1	4.3	4.3	8.4	3.5	3.75	4.5	3.6	3.6
28	5.0	4.8	4.3	4.2	4.2	4.2	5.9	3.5	3.9	3.9	3.75	3.6
29	5.0	4.6	3.9	3.9	6.6	5.3	4.8	-	3.75	3.6	3.6	3.6
30	5.0	4.6	3.75	3.9	5.5	7.4	4.3	-	3.9	3.75	3.6	3.6
31	5.0	4.5	-	4.0	-	5.5	4.0	-	3.75	-	3.45	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	7.6	5.0	5.37	8.31	166	511
August	5.0	4.5	4.83	7.47	150	459
September	4.5	3.75	4.07	6.30	122	375
October	4.2	3.2	3.55	5.49	110	338
November	8.2	3.35	4.36	6.75	131	402
December	22	3.6	5.81	8.99	180	553
Calendar year 1948	100	3.2	6.71	10.4	2,460	7,540
January	48	3.6	10.7	16.6	332	1,020
February	157	3.4	11.2	17.3	313	962
March	7	3.35	3.87	5.99	120	368
April	4.5	3.35	3.63	5.62	109	334
May	12.8	3.35	3.90	6.03	121	371
June	3.75	3.45	3.62	5.60	109	333
Fiscal year 1948-49	157	3.2	5.38	8.32	1,960	6,030

Peak discharge (base, 70 m.g.d.).--Jan. 16 (6:30 p.m.) 136 m.g.d. (210 sec.-ft.); Feb. 7 (9 a.m.) 620 m.g.d. (959 sec.-ft.).

Note.--No gage-height record Feb. 8 to Mar. 18; discharge computed on basis of records for Mohihi and Kawaikoi Streams.

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements on the island of Kauai at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on Kauai during fiscal year July 1948 to June 1949

Date	Stream	Tributary to--	Locality	Discharge	
				Second-feet	Million gallons a day
Nov. 24	Papaa	Pacific Ocean	5 feet below pipe-line crossing, 300 feet above Heki Stream, and 3 miles northwest of Anahola.	0.125	0.081
24	Heki	Papaa Stream	100 feet above pipe-line intake, 600 feet above confluence with Papaa Stream, and 3 miles northwest of Anahola.	.404	.261
24	....do	....do	Below pipe-line intake, 500 feet above confluence with Papaa Stream and 3 miles northwest of Anahola.	.170	.110
24	Noni	....do	15 feet above falls and 3 miles northwest of Anahola.	.016	.010
24	Kuiliki	....do	10 feet above falls, 25 feet above pipe-line intake, and 3 miles northwest of Anahola.	.104	.067
Oct. 7	Second Left Branch of Kalalau	Kalalau Stream	100 feet below ford on main trail and 10 miles southwest of Hanalei.	1.77	1.14
Dec. 3	....do	....do	....do	1.79	1.16

Poamoho Stream near Wahiawa

Location.--Modified Columbus control, lat. 21°31'25", long. 157°58'55", just below concrete diversion dam, 3.5 miles northeast of Wahiawa and 9½ miles north of Waipahu. Altitude of gage, 1,150 feet (from topographic map).

Drainage area.--1.8 square miles.

Records available.--January 1947 to June 1949.

Extremes.--Maximum discharge during year, 550 million gallons a day (851 second-feet) Jan. 16 (gage height, 4.00 feet), from rating curve extended above 10 million gallons a day by test on model of station site; minimum, 0.11 million gallons a day (0.17 second-foot) June 10, 11.

1947-49: Maximum discharge, 916 million gallons a day (1,420 second-feet) Mar. 30, 1947 (gage height, 5.68 feet), from rating curve extended above 10 million gallons a day by test on model of station site; no flow Feb. 4, 5, 1948.

Remarks.--Records good below 10 million gallons a day, fair above. Poamoho tunnel diverts flood water into North Fork Kaukonahua Stream about 175 feet above station.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 16		Aug. 17 to June 30			
0.4	0.77	0.2	0.13	1.0	8.53
.6	2.4	.3	.36	1.2	14.2
.8	5.4	.4	.76	1.5	28.7
1.0	10.3	.6	2.19	1.8	51
1.2	16.5	.8	4.69		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.45	1.04	1.86	1.69	1.29	4.6	4.9	3.05	1.61	1.61	0.76	0.71
2	1.38	.97	1.94	1.29	1.29	3.85	11.3	3.2	1.86	1.09	.58	.54
3	3.05	.84	1.78	1.09	1.53	3.3	12.2	3.05	2.5	.91	.54	.36
4	2.4	2.65	1.36	1.03	.91	3.3	4.8	3.9	3.2	.76	.50	.33
5	2.2	2.3	1.29	6.1	.76	2.95	4.0	3.65	1.78	.86	.50	.36
6	1.64	1.78	1.84	1.86	.62	3.05	6.8	2.85	1.36	.81	.50	.27
7	1.83	2.2	6.8	1.09	1.91	2.15	3.85	12.1	1.29	.71	1.52	.19
8	2.1	1.25	2.2	.97	4.3	3.55	17.5	13.9	1.69	.66	.62	.15
9	1.64	1.45	1.44	.86	.76	5.5	8.4	4.3	1.29	.66	.39	.13
10	1.45	1.24	1.22	.97	.66	8.7	5.1	3.55	1.15	.54	.36	.11
11	1.25	1.55	1.15	.97	.54	6.2	4.1	3.2	1.09	1.95	.46	.11
12	3.7	1.83	1.22	.86	.46	6.0	4.5	3.35	1.28	3.5	.62	3.2
13	2.65	1.92	1.36	1.15	.33	9.2	3.3	8.7	6.5	1.03	3.85	1.61
14	1.83	1.38	.97	.76	.62	11.6	3.05	3.5	1.74	.81	2.85	.50
15	3.05	1.11	.91	.71	1.36	8.3	4.8	3.8	1.22	.97	.81	.58
16	2.65	15.7	.86	.66	1.29	7.5	60	3.2	1.09	.97	.54	.59
17	3.05	4.3	.81	.58	1.29	7.7	15.4	2.75	.97	.71	.46	.27
18	3.2	10.6	.97	.54	1.22	4.3	7.6	2.65	.91	.58	.39	.19
19	2.65	6.3	.86	.50	1.15	3.7	22	2.4	.91	.54	.33	.19
20	2.0	4.1	1.03	1.38	1.09	7.1	8.2	2.3	1.03	.54	.30	.27
21	1.74	2.85	.76	2.3	.97	10.0	7.1	2.2	.91	.54	.27	.46
22	1.45	2.4	.71	1.20	.81	8.1	5.7	2.0	1.97	1.06	.27	2.2
23	1.38	9.9	4.3	2.35	.66	5.6	5.8	1.94	2.2	3.95	.25	2.6
24	1.25	7.3	8.4	.86	2.05	12.0	6.4	1.86	2.4	4.5	.23	.74
25	1.18	1.44	1.94	.86	6.2	8.0	7.5	1.86	1.80	1.31	.25	2.45
26	1.62	1.22	1.53	1.69	24.5	5.0	6.7	1.78	1.94	1.93	.23	1.19
27	1.83	1.15	2.8	4.1	4.4	4.7	4.7	1.61	.97	2.1	.23	.50
28	1.87	1.15	9.1	3.1	4.0	7.9	4.1	1.69	4.2	.97	4.3	.42
29	1.74	.97	4.5	3.8	3.85	5.6	3.7	-	3.0	.71	1.70	1.96
30	1.18	1.94	1.86	3.2	4.1	9.8	3.45	-	3.8	.86	.62	2.8
31	1.11	2.2	-	2.7	-	11.5	3.3	-	1.94	-	.62	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	3.7	1.11	1.98	3.06	61.5	189
August	15.7	.84	3.13	4.84	97.0	298
September	9.1	.71	2.26	3.50	67.8	208
October	6.1	.50	1.65	2.55	51.2	157
November	24.5	.33	2.50	3.87	74.9	230
December	12.0	2.15	6.48	10.0	201	616
Calendar year 1948	35	0	3.67	5.68	1,340	4,120
January	60	3.05	8.72	13.5	270	829
February	13.9	1.61	3.73	5.77	104	320
March	6.5	.91	1.92	2.97	59.6	183
April	4.5	.54	1.27	1.96	38.1	117
May	4.3	.23	.834	1.29	25.8	79
June	3.2	.11	.866	1.34	26.0	80
Fiscal year 1948-49	60	.11	2.95	4.56	1,080	3,310

Peak discharge (base, 130 m.g.d.).--Nov. 26 (12:30 a.m.) 202 m.g.d. (313 sec.-ft.); Jan. 16 (9 p.m.) 550 m.g.d. (851 sec.-ft.); Jan. 19 (3 a.m.) 137 m.g.d. (212 sec.-ft.).

North Fork Kaukonahua Stream near Wahiawa

Location.--Modified Columbus control, lat. 21°30'55", long. 157°59'20", 3 miles northeast of Wahiawa and 8.6 miles north of Pearl City. Altitude of gage, 970 feet (from topographic map).

Drainage area.--4.9 square miles.

Records available.--September 1946 to June 1949.

Extremes.--Maximum discharge during year, 3,190 million gallons a day (4,940 second-feet) Jan. 16 (gage height, 10.96 feet), from rating curve extended above 120 million gallons a day by test on model of station site; minimum, 1.12 million gallons a day (1.73 second-feet) Sept. 22.

1946-49: Maximum discharge, 3,340 million gallons a day (5,170 second-feet) Apr. 3, 1948 (gage height, 11.34 feet), from rating curve extended above 120 million gallons a day by test on model of station site; minimum, 0.35 millions gallons a day (0.54 second-foot Mar. 26-28, 1947.

Remarks.--Records good. Poamoho tunnel diverts flood water from Poamoho Stream into North Fork Kaukonahua Stream about a mile above station. Kaukonahua ditch diverts water 2.6 miles above station for domestic use in Wahiawa.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.5	1.45	1.6	37.5	4.0	458
.6	2.35	2.0	74	4.5	592
.8	5.0	2.5	143	5.0	740
1.0	9.1	3.0	235		
1.3	20	3.5	338		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.4	2.1	5.9	6.1	8.9	67	23	12.8	8.6	11.1	4.2	5.0
2	21.5	1.81	9.6	2.9	11.1	27	160	13.5	14.3	7.5	3.4	3.25
3	36.5	1.72	7.4	4.1	12.5	23.5	67	13.1	29.5	6.4	3.95	2.8
4	6.8	22	3.95	3.3	6.8	31	28	18.1	25	5.7	3.4	2.35
5	9.8	11.6	3.05	26	5.9	22.5	23.5	17.4	8.0	5.7	3.65	5.4
6	3.4	31.5	4.4	4.5	5.4	70	33.5	10.9	6.4	5.4	4.0	2.8
7	5.6	15.1	57	2.45	19.3	20.5	20	106	5.7	5.0	6.8	1.90
8	22.5	2.3	6.0	2.25	34	20	95	124	7.8	5.2	3.25	1.54
9	25	3.85	2.9	2.45	7.4	36.5	35.5	21	5.9	4.7	2.7	1.38
10	7.5	2.45	2.15	5.1	5.9	72	24.5	15.8	5.2	3.95	2.45	1.32
11	3.4	19.2	1.90	6.8	23	31	18.7	13.2	5.0	15.2	3.05	1.26
12	77	5.2	2.15	4.6	36.5	31	18.3	13.8	5.4	23	3.35	10.8
13	7.5	12.3	4.2	8.6	19.4	67	15.3	72	42	6.2	31.5	9.6
14	3.8	7.0	1.85	5.2	8.0	80	14.3	21	7.0	4.8	15.4	2.9
15	52	13.2	1.45	5.5	11.5	46	26.5	28	5.4	5.2	4.0	6.1
16	8.9	425	1.38	5.0	65	37.5	810	19.4	4.7	5.8	2.9	3.7
17	34	105	1.26	5.9	82	68	168	12.5	4.4	4.1	2.6	2.1
18	44	52	1.45	4.8	45	26	63	11.5	4.1	3.65	2.25	1.63
19	10.8	25	1.38	3.95	18.2	25	145	10.0	4.1	3.8	2.1	2.1
20	5.2	27	3.65	10.7	13.9	68	61	9.4	4.2	4.8	2.1	5.5
21	4.4	12.9	1.45	10.7	17.8	85	54	8.6	3.95	4.5	1.99	5.0
22	2.9	19.8	1.70	7.0	41	56	30	8.2	11.7	6.4	1.81	9.6
23	2.35	184	66	10.0	57	31.5	29	7.7	14.6	26	1.72	22
24	2.1	92	43	5.7	19.8	62	31	7.5	17.0	39.5	1.63	11.1
25	1.90	24.5	6.2	5.2	32.5	52	45	7.3	14.2	7.1	1.72	15.4
26	11.0	19.0	4.0	8.0	378	28.5	36	7.0	13.0	9.1	1.54	5.1
27	18.4	12.6	4.8	17.0	85	27.5	21.5	6.4	10.2	8.9	1.75	3.25
28	24.5	83	68	31	35.5	39.5	19.1	6.8	58	4.7	44	4.7
29	5.9	21	8.6	26	38.5	28	16.1	-	23	3.95	8.0	26
30	2.45	11.6	3.9	26	50	50	14.6	-	31.5	4.9	6.1	23.5
31	2.6	7.8	-	24	-	52	13.5	-	15.0	-	3.65	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	77	1.90	15.4	23.8	476	1,460
August	425	1.72	41.1	63.6	1,270	3,910
September	68	1.26	11.0	17.0	331	1,010
October	31	2.25	9.38	14.5	291	892
November	378	5.4	39.8	61.6	1,190	3,670
December	85	20	44.6	69.0	1,380	4,240
Calendar year 1948	605	1.26	28.9	44.7	10,570	32,440
January	810	13.5	69.7	108	2,160	6,630
February	124	6.4	22.2	34.3	623	1,910
March	58	3.95	13.4	20.7	415	1,270
April	39.5	3.65	8.41	13.0	252	774
May	44	1.54	5.84	9.04	181	555
June	26	1.26	6.64	10.3	199	611
Fiscal year 1948-49	810	1.26	24.0	37.1	8,770	26,930

Peak discharge (base, 1,500 m.g.d.).--Nov. 26 (2 a.m.) 1,640 m.g.d. (2,540 sec.-ft.); Jan. 16 (9 p.m.) 3,190 m.g.d. (4,940 sec.-ft.).

Right Branch of North Fork Kaukonahua Stream near Wahiawa

Location.--Concrete weir control, lat. 21°31'15", long. 157°56'55", 200 feet upstream from intake of Wahiawa Water Co.'s tunnel, which is just downstream from confluence of Right and Left Branches of North Fork Kaukonahua Stream, and 5½ (corrected) miles northeast of Wahiawa. Altitude of gage, 1,200 feet (from topographic map).

Drainage area.--1.2 square miles.

Records available.--May 1913 to January 1933, February 1934 to June 1949.

Average discharge.--30 years (1915-24, 1926-32, 1934-49), 7.30 million gallons a day (11.3 second-feet).

Extremes.--Maximum discharge during year, 680 million gallons a day (1,050 second-feet) Jan. 16 (gage height, 7.05 feet), from rating curve extended above 40 million gallons a day by test on model of station site; minimum, 0.30 million gallons a day (0.46 second-foot) June 10, 11.

1913-49: Maximum discharge, 1,500 million gallons a day (2,320 second-feet) Aug. 12, 1940 (gage height, 9.34 feet), from rating curve extended above 40 million gallons a day by test on model of station site; minimum, 0.09 million gallons a day (0.15 second-foot) Mar. 22, 1926.

Remarks.--Records good. No diversions above station.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

2.6	0.30	3.1	6.6	4.0	49
2.7	.80	3.2	9.2	4.5	88
2.8	1.63	3.3	12.3	5.0	144
2.9	2.85	3.4	16.0		
3.0	4.5	3.6	24.5		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.25	1.63	4.0	3.2	1.87	14.7	5.6	3.35	2.15	1.87	0.97	0.97
2	9.1	1.55	4.9	2.35	2.25	6.4	46	3.5	3.0	1.30	.80	.70
3	14.0	5.3	4.0	2.5	2.4	6.2	21.5	3.2	8.2	1.13	.80	.55
4	3.95	8.4	3.2	2.2	1.38	8.0	7.4	7.9	6.3	1.05	.75	.63
5	3.4	4.6	2.85	7.9	1.22	5.4	6.2	3.6	1.87	1.13	.80	1.05
6	2.5	14.4	4.1	2.5	1.22	12.4	7.8	2.85	1.46	.97	.88	.55
7	3.25	3.7	22	2.1	7.7	4.5	5.1	31	1.30	.88	2.15	.45
8	6.2	2.25	3.7	1.87	4.7	4.5	17.5	21.5	2.05	.97	.75	.40
9	8.1	3.85	2.85	1.87	1.55	7.7	6.9	4.5	1.22	.80	.65	.35
10	3.0	1.87	2.75	2.25	1.22	11.3	4.9	3.7	1.13	.75	.60	.30
11	6.2	7.6	2.6	1.87	6.1	6.2	4.3	3.0	1.13	7.1	1.27	.35
12	18.6	3.45	2.5	1.80	12.6	7.2	4.5	3.75	7.5	3.5	.75	4.1
13	3.7	5.3	2.6	2.25	3.55	19.3	3.5	22	8.4	1.22	13.5	1.54
14	2.85	2.5	2.1	1.38	2.0	16.8	3.35	5.9	1.55	.97	3.2	.70
15	20.5	6.6	2.3	1.55	2.65	8.5	7.0	4.9	1.22	1.52	.97	1.97
16	4.0	126	1.87	1.22	19.7	8.1	111	4.7	1.05	1.30	.75	.70
17	8.6	29	2.25	1.30	18.6	12.5	22.5	3.0	.97	.80	.65	.45
18	8.8	21.5	1.63	1.13	10.8	5.3	14.3	2.75	.88	.75	.60	.40
19	3.7	12.8	2.45	1.13	4.5	5.4	31.5	2.5	.97	.80	.60	.50
20	3.0	10.0	2.2	4.9	3.7	14.1	13.3	2.35	.97	1.22	.55	.60
21	2.75	6.0	1.63	1.95	7.2	17.4	12.7	2.25	.80	1.05	.55	2.6
22	2.5	6.7	1.46	2.8	6.3	10.2	6.6	2.0	2.4	4.2	.55	3.1
23	2.35	63	17.4	2.0	10.9	6.9	7.9	1.87	2.8	8.0	.50	2.6
24	2.1	31	12.6	1.38	4.4	16.0	9.5	1.75	3.1	10.4	.50	2.9
25	2.0	9.3	3.6	1.38	17.0	10.9	16.7	1.75	2.15	1.63	.50	5.8
26	4.1	8.0	3.1	1.61	43	6.2	9.6	1.63	1.63	2.5	.45	1.77
27	7.6	6.2	4.6	4.4	14.5	6.9	6.0	1.46	2.35	2.3	8.4	.88
28	7.7	22	16.0	6.1	7.1	9.2	4.7	1.55	9.2	1.13	13.3	.97
29	2.5	6.6	4.3	4.6	11.8	6.0	4.2	-	4.8	.97	1.64	6.5
30	2.0	5.3	3.0	4.0	12.4	16.9	3.85	-	4.2	1.22	1.45	7.6
31	2.25	4.5	-	3.5	-	9.7	3.5	-	2.65	-	.80	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	20.5	2.0	5.63	8.71	175	536
August	126	1.55	14.2	22.0	441	1,350
September	22	1.46	4.82	7.46	145	444
October	7.9	1.13	2.61	4.04	81.0	249
November	43	1.22	8.14	12.6	244	750
December	19.3	4.5	9.70	15.0	301	923
Calendar year 1948	126	.83	8.18	12.7	2,990	9,190
January	111	3.35	13.9	21.5	429	1,320
February	31	1.46	5.51	8.53	154	473
March	9.2	.80	2.88	4.46	89.4	274
April	10.4	.75	2.11	3.26	63.4	195
May	13.5	.45	1.96	3.03	60.6	186
June	7.6	.30	1.73	2.68	52.0	160
Fiscal year 1948-49	126	.30	6.12	9.47	2,240	6,860

Peak discharge (base, 420 m.g.d.).--Jan. 16 (7:30 p.m.) 680 m.g.d. (1,050 sec.-ft.).

Left Branch of North Fork Kaukonahua Stream near Wahiawa

Location.--Columbus control, lat. 21°31'10", long. 157°56'55", 140 feet upstream from intake of Wahiawa Water Co.'s tunnel and the confluence of Right and Left Branches of North Fork Kaukonahua Stream, and 5½ miles (corrected) northeast of Wahiawa. Altitude of gage, 1,200 feet (from topographic map).

Drainage area.--1.5 square miles.

Records available.--May 1913 to June 1949.

Average discharge.--32 years (1915-24, 1926-49), 10.8 million gallons a day (16.7 second-feet).

Extremes.--Maximum discharge during year, 1,200 million gallons a day (1,860 second-feet) Jan. 16 (gage height, 7.07 feet), from rating curve extended above 43 million gallons a day by test on model of station site; minimum, 0.41 million gallons a day (0.63 second-foot) May 26, June 10, 11.

1913-49: Maximum discharge, 5,400 million gallons a day (8,360 second-feet) Jan. 1, 1933 (gage height, 11.7 feet, from floodmark on well), from rating curve extended above 15 million gallons a day; minimum, 0.08 million gallons a day (0.12 second-foot) Mar. 2, 13, 1941.

Remarks.--Records good. No diversions above station.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Jan. 16						Jan. 17 to June 30			
1.8	1.45	2.4	10.4	3.3	74	1.6	0.52	2.2	5.39
1.9	2.15	2.6	17.4	3.6	115	1.7	.84	2.4	9.58
2.0	3.1	2.8	27.5	3.9	166	1.8	1.31	2.7	20
2.2	5.9	3.0	42	4.3	250	2.0	2.85	3.0	38.5

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.7	2.9	6.3	5.5	3.7	10.6	8.6	3.4	2.5	4.0	1.44	2.7
2	12.3	2.6	9.4	3.7	5.4	8.5	84	3.65	6.7	2.6	1.28	1.31
3	8.7	6.4	7.2	6.2	6.1	9.1	23.5	4.6	13.9	2.05	1.40	1.08
4	9.1	8.1	5.3	3.5	2.8	7.1	10.4	5.4	10.5	1.85	1.44	1.59
5	6.3	8.3	4.6	9.7	2.55	7.0	8.6	4.1	2.6	1.91	1.31	2.7
6	4.3	30	5.6	3.6	2.25	25	10.5	2.85	1.98	1.64	2.15	1.03
7	5.6	5.6	25	3.35	13.3	6.5	7.1	23	1.71	1.64	1.67	.75
8	15.3	3.35	5.1	2.9	6.8	7.1	22.5	39	2.75	1.85	.98	.55
9	23	5.2	4.3	3.0	2.6	11.3	11.5	5.2	1.58	1.38	.81	.52
10	5.7	2.9	3.8	3.5	2.25	25.5	6.7	3.85	1.44	1.22	.74	.45
11	11.6	18.9	3.7	2.7	7.9	9.9	6.1	3.3	1.44	9.4	1.11	.53
12	29	7.3	3.95	3.1	6.1	9.9	5.7	3.05	7.0	5.9	.81	8.7
13	5.9	10.2	3.95	3.2	5.6	35.5	5.0	18.6	9.5	1.85	11.9	2.2
14	4.6	7.5	3.0	2.15	2.6	27.5	4.3	4.2	1.85	1.64	5.6	1.08
15	23	41	2.9	2.9	6.5	12.3	8.8	11.8	1.51	2.3	1.26	3.6
16	5.8	135	2.6	2.3	26.5	12.0	279	4.9	1.31	1.83	.93	1.29
17	17.6	35	3.4	3.8	23.5	28.5	26.5	3.3	1.22	1.22	.81	.68
18	19.1	18.8	2.55	2.0	19.3	8.2	15.5	3.2	1.12	1.17	.71	.96
19	6.1	13.1	3.5	1.87	5.9	9.4	25.5	2.7	1.31	1.44	.68	3.15
20	5.1	18.7	3.15	7.2	5.4	35.5	21.5	2.6	1.22	1.71	.74	2.45
21	5.1	8.2	2.35	3.4	13.5	40	17.7	2.35	1.03	2.1	.62	3.3
22	4.1	18.2	3.05	4.1	18.5	20.5	7.4	2.15	5.4	4.4	.55	5.6
23	3.6	99	46	2.75	14.9	11.7	6.8	1.98	6.8	8.9	.50	8.5
24	3.45	31	18.2	2.8	6.7	20	7.5	1.91	6.4	17.0	.48	6.4
25	3.1	11.9	5.5	2.5	19.6	21	13.6	1.91	3.8	2.35	.48	5.6
26	10.8	13.0	5.4	3.45	50	10.4	9.0	1.78	2.5	3.95	.43	1.91
27	12.4	9.4	6.7	5.9	22.5	11.7	5.8	1.58	5.7	3.35	1.13	1.85
28	19.4	41	32	11.0	9.2	14.7	4.8	1.85	18.3	1.71	25	2.45
29	4.7	10.2	6.8	10.4	13.6	9.2	4.2	-	8.3	1.38	2.2	14.1
30	3.6	9.3	6.9	8.3	12.5	23.5	3.85	-	10.4	2.2	4.1	12.0
31	3.45	7.3	-	10.6	-	13.6	3.65	-	6.2	-	2.1	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	29	3.1	9.73	15.1	302	925
August	135	2.6	20.6	31.9	639	1,960
September	46	2.35	8.07	12.5	242	743
October	11.0	1.87	4.56	7.06	141	434
November	50	2.25	11.3	17.5	338	1,040
December	40	6.5	16.2	25.1	503	1,540
Calendar year 1948	344	1.24	13.0	20.1	4,740	14,530
January	279	3.65	21.8	33.7	676	2,070
February	39	1.58	6.01	9.30	168	516
March	18.3	1.03	4.77	7.38	148	454
April	17.0	1.17	3.20	4.95	95.9	294
May	25	.43	2.43	3.76	75.4	231
June	14.1	.45	3.30	5.11	99.0	304
Fiscal year 1948-49	279	.43	9.39	14.5	3,430	10,510

Peak discharge (base, 700 m.g.d.).--Aug. 16 (7:30 p.m.) 735 m.g.d. (1,140 sec.-ft.); Jan. 16 (7:30 p.m.) 1,200 m.g.d. (1,860 sec.-ft.).

Kaukonahua ditch near Wahiawa

Location.--Parshall flume, lat. 21°30'45", long. 157°59'20", 3 miles northeast of Wahiawa. Altitude of gage, 1,100 feet (from topographic map).

Records available.--March 1947 to June 1949.

Extremes.--Maximum discharge during year, 9.6 million gallons a day (14.9 second-feet) Aug. 16, Sept. 28 (gage height, 1.17 feet); no flow for many days.
1947-49: Maximum discharge, 17.2 million gallons a day (26.6 second-feet) Jan. 24, 1948 (gage height, 1.65 feet); no flow at times.

Remarks.--Records good. Ditch diverts water from North Fork Kaukonahua Stream for domestic use.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.9	4.6	6.8	6.4	0.04	0.04	0	0				
2	7.2	4.2	6.8	5.6	.04	.03	0	0				
3	7.3	4.0	6.6	5.8	.04	.03	0	0				
4	6.8	7.2	6.4	5.0	.04	.03	0	0				
5	6.8	7.1	6.2	6.8	.04	.03	0	0				
6	5.8	6.3	6.4	5.4	.04	.04	0	0				
7	6.2	7.1	7.3	4.7	.04	.04	0	.02				
8	7.2	5.6	6.6	4.4	.05	.03	0	.02				
9	7.1	6.1	6.4	4.3	.04	.04	0	0				
10	6.5	4.8	5.9	2.45	.04	.04	0	0				
11	6.2	6.0	5.8	.04	.04	.03	0	0				
12	7.8	6.6	5.8	.04	.04	.03	0	0				
13	6.6	7.2	5.8	.04	.03	.03	0	0				
14	6.2	6.9	4.8	.04	.03	.03	0	0				
15	7.2	6.1	5.0	.03	.03	.02	.01	0				
16	6.8	9.0	4.3	.03	.04	.02	.25	0				
17	4.7	8.8	5.1	.03	.04	.04	.06	0				
18	3.7	8.3	4.0	.03	.03	.03	.04	0				
19	4.5	8.0	4.7	.03	.03	.02	.02	0				
20	5.9	8.0	3.9	.03	.03	0	0	0				
21	6.1	7.6	3.7	.03	.03	0	0	0				
22	6.1	7.6	3.6	.03	.04	0	0	0				
23	5.7	8.5	5.3	.03	.04	0	0	0				
24	5.3	8.6	7.6	.03	.04	0	0	0				
25	5.2	7.9	6.6	.02	.05	0	0	0				
26	6.8	7.8	6.4	.02	.06	0	0	0				
27	7.1	7.5	6.5	.02	.04	0	0	0				
28	7.2	8.2	7.8	.02	.04	0	0	0				
29	6.5	7.6	6.9	.04	.04	0	0	-				
30	5.4	7.2	6.5	.03	.04	0	0	-				
31	5.4	7.1	-	.04	-	0	0	-				

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	7.8	3.7	6.26	9.69	194	596
August	9.0	4.0	7.02	10.9	218	667
September	7.8	3.6	5.85	9.05	176	539
October	6.8	.02	1.66	2.57	51.5	158
November	.06	.03	.039	.060	1.17	3.6
December	.04	0	.019	.029	.60	1.8
Calendar year 1948	10.1	0	4.91	7.60	1,800	5,510
January	.25	0	.012	.019	.38	1.2
February	.02	0	.001	.002	.04	.1
March	0	0	0	0	0	0
April	0	0	0	0	0	0
May	0	0	0	0	0	0
June	0	0	0	0	0	0
Fiscal year 1948-49	9.0	0	1.76	2.72	642	1,970

208538 O - 52 - 4

South Fork Kaukonahua Stream near Wahiawa

Location.--Masonry dam control, lat. 21°30'05", long. 157°56'50", at Canon Dam, 5.4 miles east of Wahiawa and 7.7 miles north of Pearl City. Altitude of gage, 1,070 feet (from topographic map).

Drainage area.--1.9 square miles.

Records available.--May 1944 to June 1949.

Extremes.--Maximum daily discharge during year, 280 million gallons a day (433 second-feet) Jan. 16, from rating curve extended above 15 million gallons a day by test on model of station site; minimum, 0.26 million gallons a day (0.40 second-foot) June 18. 1944-49: Maximum discharge, 741 million gallons a day (1,150 second-feet) Nov. 8, 1944 (gage height, 5.80 feet), from rating curve extended above 15 million gallons by test on model of station site; minimum, 0.01 million gallons a day (0.02 second-foot) Feb. 21, 1945.

Remarks.--Records good except those for period of no gage-height record, which are fair.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.50	1.1	6.2	2.0	63
.7	.74	1.2	10.2	2.4	110
.8	1.02	1.3	14.5	3.0	191
.9	1.38	1.5	25	3.5	270
1.0	2.55	1.7	38		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.6	1.77	4.3	8.2	5.8	11.5	11.5	4.0	1.90	4.5	1.88	5.2
2	4.3	1.47	8.0	4.7	6.7	9.8	31.5	4.7	3.3	2.0	1.38	1.12
3	4.3	1.53	6.1	8.3	6.3	7.7	16.5	16.0	4.0	1.53	1.31	1.52
4	6.9	2.55	3.65	3.65	2.9	7.0	10.6	8.6	2.9	1.27	1.20	1.84
5	5.3	4.4	3.3	5.0	2.25	6.2	9.4	5.3	1.29	1.38	1.81	1.78
6	4.3	12.1	3.65	3.3	2.0	15.4	11.9	3.65	.94	1.27	1.36	.74
7	8.7	7.0	10.2	3.65	12.4	6.6	8.9	48	.82	1.31	1.02	.48
8	8.5	1.68	3.3	3.3	9.6	11.5	23	30.5	2.9	1.40	.85	.34
9	4.9	1.60	2.25	2.55	2.25	13.6	14.4	7.0	1.14	1.02	.77	.31
10	2.9	1.42	2.0	4.6	1.88	33	9.2	5.0	.85	.85	.72	.28
11	6.9	16.6	2.9	4.9	8.9	18.0	7.4	4.3	.74	22	.69	.30
12	23.5	4.5	6.6	5.9	4.3	12.1	7.4	3.65	2.4	8.7	.64	7.0
13	4.3	7.7	3.65	3.85	5.8	29.5	6.2	7.8	21.5	1.88	4.3	3.1
14	2.9	5.6	1.68	1.47	2.25	27.5	5.8	5.8	1.58	2.95	4.8	1.01
15	12.7	24	1.47	2.25	8.0	16.1	7.8	6.3	.96	1.88	1.01	.82
16	4.3	60	1.34	1.68	12.2	19.5	a280	3.65	.74	1.35	.67	.67
17	23	16.3	2.1	2.55	18.4	22	a62	2.9	.64	.99	.57	.36
18	23	10.1	1.53	1.38	10.6	10.2	19.3	2.55	.57	.88	.52	.42
19	6.2	7.4	1.31	1.24	4.3	10.4	29.5	2.25	.62	.91	.50	3.0
20	4.7	8.6	1.38	7.3	3.3	24	17.6	1.88	.62	.82	.50	2.6
21	4.3	5.4	1.44	4.9	5.4	35	17.2	1.68	.48	1.12	.46	1.12
22	3.65	13.8	1.80	6.6	8.2	20	9.8	1.47	7.9	14.4	.43	8.8
23	2.9	36.5	28.5	4.4	13.6	15.9	8.9	1.38	4.7	13.8	.41	22
24	2.55	14.3	13.9	4.8	3.65	28	8.1	1.34	4.1	22	.39	7.1
25	2.25	7.4	3.65	3.0	3.3	26	13.1	1.27	1.88	2.9	.39	4.0
26	9.8	6.6	4.5	8.3	34.5	15.6	10.2	1.20	1.34	10.6	.34	1.22
27	4.3	6.2	14.9	7.6	28.5	14.5	7.0	1.09	1.79	9.8	.32	.92
28	5.3	28	36.5	10.9	12.8	22.5	6.2	1.42	13.2	2.55	16.3	2.4
29	3.3	8.5	8.8	18.1	11.5	15.4	5.4	-	10.3	1.77	2.05	8.5
30	2.25	7.7	9.7	10.3	14.0	37.5	5.0	-	15.8	6.9	.96	3.65
31	2.0	5.4	-	15.6	-	19.9	4.7	-	8.2	-	1.86	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	23.5	2.0	6.86	10.6	213	653
August	60	1.42	10.8	16.7	336	1,030
September	36.5	1.31	6.48	10.0	194	597
October	18.1	1.24	5.62	8.70	174	535
November	34.5	1.88	8.85	13.7	266	815
December	37.5	6.2	18.1	28.0	562	1,720
Calendar year 1948	100	.80	9.92	15.3	3,630	11,140
January	280	4.7	22.1	34.2	686	2,100
February	48	1.09	6.60	10.2	185	567
March	21.5	.48	3.87	5.99	120	369
April	22	.82	4.82	7.46	145	444
May	16.3	.32	1.63	2.52	50.4	155
June	22	.28	3.09	4.78	92.6	284
Fiscal year 1948-49	280	.28	8.28	12.8	3,020	9,270

Peak discharge (base, 400 m.g.d.).--Jan. 16 (time and discharge unknown).

a No gage-height record; discharge computed on basis of records for South Fork Kaukonahua Stream above Wahiawa Reservoir.

South Fork Kaukonahua Stream above Wahiawa Reservoir, near Wahiawa

Location.--Columbus-type control, lat. 21°29'35", long. 157°59'55", 2 miles southeast of Wahiawa and 7½ miles north of Waipahu. Altitude of gage, 850 feet (corrected), from topographic map.

Drainage area.--3.3 square miles.

Records available.--October 1946 to June 1949.

Extremes.--Maximum discharge during year, 2,540 million gallons a day (3,930 second-feet) Jan. 16 (gage height, 12.71 feet), from rating curve extended above 80 million gallons a day by test on model of station site; minimum, 0.72 million gallons a day (1.11 second-feet) June 17-19.
1946-49: Maximum discharge, that of Jan. 16, 1949; minimum, 0.48 million gallons a day (0.74 second-foot) Oct. 29, 1946.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Jan. 16

0.5	1.35	1.1	12.0	3.0	193
.6	2.2	1.3	19.5	4.0	322
.7	3.3	1.6	35.5	5.0	470
.8	4.7	2.0	68	6.0	630
.9	6.6	2.5	131	7.0	835

Jan. 17 to June 30

0.4	0.76	0.8	4.59	1.6	36
.5	1.36	1.0	8.4	1.9	60
.6	2.19	1.2	14.1	2.2	92
.7	3.25	1.4	23.3		

Note.--Same as preceding table above 2.2 feet.

Discharge, in million gallons, fiscal year July 1948 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.7	4.3	4.5	11.8	13.0	21.5	29	9.7	4.9	13.6	23	2.15
2	2.4	3.4	9	4.8	14.0	13.0	52	10.2	7.1	8.0	93	1.44
3	2.65	3	6.5	8.8	12.1	11.0	36	17.6	8.2	6.1	108	2.05
4	3.3	5.5	5	4.8	6.8	9.5	22.5	18.2	6.3	5.1	19.2	3.05
5	9.4	9	3.5	4.6	5.8	7.8	20	12.0	3.65	4.9	11.4	2.6
6	2.55	15	6	3.8	5.1	33	30	8.9	4.2	4.8	2.7	1.61
7	5.8	9	12	3.1	10.3	27	18.9	91	3.8	4.9	2.3	1.00
8	12.0	4	6	3.25	31	37	89	121	6.9	5.1	2.0	.88
9	2.75	2	3	2.55	6.2	58	36.5	20.5	4.9	3.9	1.86	.82
10	2.1	1.6	2	3.3	4.2	112	26.5	13.8	3.65	3.4	1.78	.76
11	1.86	20	4	5.3	30.5	57	18.9	11.6	3.4	15.3	1.79	.76
12	34.5	6	8	6.6	25	43	18.3	10.2	3.4	25.5	1.53	1.49
13	3.85	9	4	8.0	27	64	15.5	16.8	27.5	5.5	1.61	5.0
14	1.86	7	2.6	3.0	22	72	14.1	11.7	5.3	7	4.5	1.44
15	8.4	30	1.94	2.65	27	41	20	19.9	3.4	5	2.2	1.00
16	4.5	90	1.44	2.55	35	41	841	10.5	3.15	3.5	1.53	.88
17	40	35	1.60	2.95	43	50	188	8.2	2.85	3.2	1.44	.76
18	55	15	1.86	2.5	28	22.5	57	7.8	2.55	3.2	1.36	.72
19	16.2	9	1.60	1.78	6.9	20	81	7.3	2.7	3.3	1.30	.76
20	9.8	10	1.52	2.25	4.7	45	37.5	7.1	2.7	3	1.30	2.75
21	7.8	6	1.29	9.3	5.7	94	36	6.9	2.4	5	1.30	1.53
22	6.6	17	1.29	2.9	16.3	61	23	6.7	15.1	24	1.24	1.60
23	5.6	45	27.5	9.6	20.5	36.5	20	6.5	13.2	22	1.18	47
24	4.7	20	24.5	5.4	6.6	68	18.2	5.8	10.9	33	1.06	7.0
25	4.6	9	5.0	4.6	5.6	68	19.0	4.6	10.2	6.4	1.12	4.6
26	10.9	7.5	3.3	14.0	71	37.5	22.5	4.5	10.4	12.9	1.06	2.0
27	8.5	7	14.8	15.8	85	32.5	14.1	4.5	4.9	19.9	1.00	1.24
28	7.2	35	84	28	31	59	13.2	5.1	34	6.8	10.3	2.45
29	8.6	16	12.0	48	21	40	11.6	-	25	7.9	4.1	6.2
30	5.6	9	8.0	28.5	26.5	67	11.0	-	70	27.5	1.24	3.3
31	5.8	6.5	-	39	-	58	10.2	-	19.2	-	1.06	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	55	1.86	9.82	15.2	305	935
August	90	1.6	15.0	23.2	466	1,430
September	84	1.29	8.92	13.8	268	822
October	48	1.78	9.47	14.7	293	901
November	85	4.2	21.6	33.4	647	1,980
December	112	7.8	45.4	70.2	1,410	4,320
Calendar year 1948	383	1.29	20.2	31.3	7,380	22,630
January	841	10.2	59.7	92.4	1,850	5,680
February	121	4.5	17.1	26.5	479	1,470
March	70	2.4	10.5	16.2	326	1,000
April	33	3	9.99	15.5	300	920
May	108	1.00	9.95	15.4	308	947
June	47	.72	3.63	5.62	109	334
Fiscal year 1948-49	841	.72	18.5	28.6	6,760	20,740

Peak discharge (base, 700 m.g.d.).--Jan. 16 (9:30 p.m.) 2,540 m.g.d. (3,930 sec.-ft.).
Note.--No gage-height record Aug. 3 to Sept. 13, Apr. 14-22; discharge computed on basis of records for Poamoho and South Fork Kaukonahua Streams near Wahiawa.

Pearl Harbor Springs at Waiawa, near Pearl City

Location.--Sharp-crested weir, lat. 21°23'35" (corrected), long. 157°59'10", at rear of Oahu Sugar Co.'s pumping plant 9, on right bank of stream, 0.7 mile west of Pearl City and 9.8 miles northwest of Honolulu. Datum of gage is 0.73 foot below mean sea level (corrected).

Records available.--March 1931 to June 1934, July 1937 to June 1949.

Average discharge.--15 years (1931-34, 1937-49), 11.7 million gallons a day (18.1 second-feet), unadjusted for pumpage.

Extremes.--Maximum daily discharge during year, 18.7 million gallons a day (28.9 second-feet) Feb. 27; minimum daily, 10.6 million gallons a day (16.4 second-feet) Oct. 18-20 1931-34, 1937-49: Maximum daily discharge, that of Feb. 27, 1949; minimum daily, 6.0 million gallons a day (9.3 second-feet) on several days in 1941 and 1947.

Remarks.--Records good except those for period of no gage-height record, which are poor. Oahu Sugar Co.'s pump 9 diverts about 3 million gallons a day at times when water is needed for irrigation of sugarcane. Surface runoff from floods not included in figure of discharge given below.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.1	14.7	12.7	13.9	13.9	13.9	13.5	15	17.9	17.1	15.9	15.5
2	13.1	13.1	10.9	13.9	13.9	13.9	13.1	15.5	17.9	17.1	15.9	15.5
3	13.1	13.1	10.9	13.9	12.7	13.9	13.5	15.5	17.5	17.1	15.9	15.5
4	14.7	13.5	12.3	12.7	12.7	13.9	13.5	15.5	17.1	17.5	15.9	15.5
5	14.7	13.5	13.9	12.7	13.9	13.9	13.1	15.5	16.3	17.5	15.9	15.5
6	13.5	13.9	13.9	12.7	13.9	13.9	14.3	16	16.3	17.5	15.9	15.5
7	13.5	14.7	12.7	13.9	13.9	14.3	14.3	16	16.7	17.5	15.9	15.1
8	13.5	14.7	12.7	13.9	13.9	14.3	14.7	16	17.1	17.5	15.9	14.7
9	13.5	13.1	13.9	13.9	13.9	13.9	14.7	16	17.1	17.5	15.9	14.7
10	13.5	11.3	13.9	13.9	13.9	13.5	14.7	16	17.5	17.9	15.9	14.7
11	14.7	11.3	13.9	13.9	13.9	13.9	13.9	16	17.5	17.9	15.9	14.3
12	13.5	11.6	13.9	13.5	13.9	13.5	13.9	16.5	17.1	17.9	15.9	14.3
13	13.5	13.1	12.7	13.5	14.3	13.1	13.9	16.5	17.1	17.5	15.9	14.3
14	13.1	13.9	12.7	13.5	14.7	13.1	13.9	16.5	17.5	16.3	15.9	13.9
15	13.1	14.3	12.7	13.5	14.7	13.5	13.9	16.5	17.1	16.3	15.9	14.3
16	13.1	13.1	12.7	13.5	14.7	13.5	14	17	17.1	16.3	15.9	14.7
17	13.1	14.3	12.7	13.5	14.7	13.9	14	17	14.3	16.3	15.9	14.7
18	14.7	14.3	12.7	10.6	14.3	13.9	14	17	16.3	16.3	12.7	14.7
19	13.5	13.9	13.5	10.6	14.3	14.3	14	17	17.5	16.3	12.7	14.3
20	13.5	12.7	11.6	10.6	14.7	14.3	14	17	17.5	16.3	12.7	14.3
21	13.1	12.7	12.7	11.6	14.3	14.3	14.5	17	17.1	15.9	14.3	14.3
22	13.1	14.3	12.7	13.1	14.3	13.9	14.5	17.5	17.1	15.9	15.9	14.3
23	13.1	13.1	12.7	13.1	14.3	13.9	14.5	17.5	17.1	15.9	15.9	13.9
24	13.1	13.5	12.7	13.5	13.9	13.5	14.5	17.5	17.1	15.9	15.5	13.9
25	14.7	13.9	12.7	13.5	13.9	13.5	14.5	17.5	17.1	15.9	15.5	13.9
26	13.1	13.9	13.9	13.5	14.3	14.3	15	17.9	17.1	15.9	15.5	13.9
27	13.1	13.1	12.7	13.5	14.3	13.5	15	18.7	17.1	15.9	15.1	14.3
28	13.1	13.1	12.7	13.1	14.7	13.5	15	17.9	14.3	15.9	15.1	14.3
29	13.1	13.9	13.9	13.1	14.3	13.5	15	-	14.3	15.9	15.5	14.3
30	13.1	10.9	13.9	13.5	13.9	13.5	15	-	14.3	15.9	15.5	14.3
31	14.7	12.7	-	13.9	-	13.5	15	-	16.7	-	15.9	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14.7	13.1	13.5	20.9	419	1,290
August	14.7	10.9	13.3	20.6	413	1,270
September	13.9	10.9	12.9	20.0	388	1,190
October	13.9	10.6	13.1	20.3	408	1,250
November	14.7	12.7	14.1	21.8	423	1,300
December	14.3	13.1	13.8	21.4	427	1,310
Calendar year 1948	14.7	8.0	12.7	19.6	4,650	14,270
January	15	13.1	14.2	22.0	441	1,350
February	18.7	15	16.6	25.7	466	1,430
March	17.9	14.3	16.8	26.0	520	1,590
April	17.9	15.9	16.7	25.8	501	1,540
May	15.9	12.7	15.4	23.8	478	1,470
June	15.5	13.9	14.6	22.6	437	1,340
Fiscal year 1948-49	18.7	10.6	14.6	22.6	5,320	16,330

Note.--No gage-height record Jan. 16 to Feb. 25; discharge computed on basis of pumping records and records for Pearl Harbor Springs at Kalauao.

Pearl Harbor Springs at Kalauao, near Aiea

Location (revised).--Sharp-crested weir, lat. 21°23'05", long. 157°56'47", on left bank of stream, 900 feet downstream from Oahu Sugar Co. (formerly Honolulu Plantation) pump 6, 1.1 miles west of Aiea, and 7.6 miles northwest of Honolulu. Datum of gage is 1.38 feet below mean sea level.

Records available.--March 1931 to June 1949.

Average discharge, 18 years, 15.7 million gallons a day (24.3 second-feet), unadjusted for pumpage.

Extremes.--Maximum daily discharge during year, 23.5 million gallons a day (36.4 second-feet) for several days in February and March; minimum daily, 13.8 million gallons a day (21.4 second-feet) Oct. 13-15, 18.

1931-49: Maximum daily discharge, 25 million gallons a day (39 second-feet) Feb. 17-26, 1938; minimum daily, 7.2 million gallons a day (11.1 second-feet) Aug. 25, Sept. 2, 1947.

Remarks.--Records fair. Oahu Sugar Co.'s pump 6 diverts about 7 million gallons a day as a high-lift pump or 9 million gallons a day as a low-lift pump at times when water is needed for irrigation of sugarcane. Surface runoff from floods not included in figures of discharge given below.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16.3	21	15	20.5	19.4	20.5	21	22	23.5	19.4	19.4	17.2
2	16.3	16.7	17	19.8	19.0	20.5	21	22	23.5	19.8	17.6	17.2
3	18.5	17.2	15	19.8	19.4	20.5	21	22	23.5	19.4	19.4	15.9
4	20.5	17.2	18	15.9	19.0	20.5	21	22	21	18.5	17.2	18.0
5	20.5	21	21	15.9	19.0	20.5	21	22	23.5	19.8	17.2	19.0
6	16.3	21	20	15.9	19.0	20.5	21	22	23.5	19.8	19.4	15.0
7	17.2	21	15	14.6	19.4	20.5	21	22	20.5	19.8	22.5	16.3
8	17.2	16	16	16.3	19.4	20.5	21	22	21	19.8	22.5	16.3
9	17.2	15.0	16	19.4	19.4	17.6	21	22.5	20.5	19.8	19.8	16.7
10	19.8	17.2	16	19.4	19.4	20.5	21	22.5	20.5	23	22.5	16.7
11	19.8	17.2	18	15.0	19.8	20.5	21	22.5	21	19.8	22.5	21
12	16.3	17.2	20	15.0	19.8	20.5	21	22.5	23	19.8	19.8	19.0
13	16.3	17.6	15	13.8	19.8	20.5	21	22.5	23	19.8	19.8	16.3
14	14.6	21	16	13.8	19.8	20.5	21	22.5	21	19.8	18.0	18.0
15	14.6	21	16	13.8	19.8	20.5	21	22.5	18.0	23	20.5	18.0
16	14.6	17.2	17	17.2	16.7	20.5	21.5	22.5	20.5	19.8	15.9	18.0
17	18.0	15.9	17.2	18.0	19.8	20.5	21.5	22.5	20.5	21.5	17.6	18.0
18	19.8	15.9	17.2	13.8	19.8	20.5	22	19.8	19.8	18.0	17.2	18.0
19	15.9	15.4	19.8	15.0	19.8	20.5	22	19.8	19.8	20.5	17.6	19.0
20	15.9	15.4	15.9	15.0	19.8	20.5	22	21	23	20.5	17.6	14.6
21	15.9	17.6	15.4	14.6	19.8	20.5	22	21	19.8	17.6	19.0	15.4
22	15.9	20.5	15.0	15.4	16.7	20.5	22	20.5	19.8	19.8	20.5	15.9
23	15.9	15.9	16.3	19.0	17.2	21	22	23.5	17.6	19.8	15.4	15.4
24	20.5	15.9	15.4	18.0	18.0	21	22	20.5	17.2	21	16.7	15.9
25	21	15.9	18.0	15.0	20.5	21	22	23.5	17.2	17.6	19.4	17.6
26	14.6	15.4	20.5	19.4	20.5	21	22	21	22.5	20.5	19.4	19.4
27	15.0	16	17.2	19.4	20.5	21	22	23.5	23	22.5	19.8	16.3
28	16.7	17	20.5	19.4	20.5	21	22	21	19.8	17.2	19.4	15.4
29	16.7	20	20.5	19.4	20.5	21	22	-	20.5	17.2	22.5	15.4
30	16.7	15	20.5	19.4	16.7	21	22	-	21.5	19.8	20.5	15.4
31	19.0	15	-	19.4	-	21	22	-	22.5	-	17.6	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21	14.6	17.2	26.6	534	1,640
August	21	15.0	17.6	27.2	546	1,680
September	21	15.0	17.3	26.8	520	1,600
October	20.5	13.8	17.0	26.3	526	1,620
November	20.5	16.7	19.3	29.9	578	1,770
December	21	17.6	20.6	31.9	637	1,960
Calendar year 1948	23	11.3	16.9	26.1	6,180	18,990
January	22	21	21.5	33.3	666	2,040
February	23.5	19.8	21.9	33.9	614	1,880
March	23.5	17.2	21.0	32.5	652	2,000
April	23	17.2	19.8	30.6	595	1,820
May	22.5	15.4	19.1	29.6	592	1,820
June	21	14.6	17.0	26.3	510	1,570
Fiscal year 1948-49	23.5	13.8	19.1	29.6	6,970	21,400

Note.--No gage-height record Aug. 27 to Sept. 16; discharge computed on basis of pumping records and records for Pearl Harbor Springs at Waiawa.

Moanalua Stream near Honolulu

Location.--Concrete weir control, lat. 21°22'50", long. 157°52'20", 5 miles upstream from mouth and 5 miles north of Honolulu post office. Datum of gage is 339.12 feet above mean sea level (city and county of Honolulu bench mark).

Drainage area.--2.8 square miles.

Records available.--June 1926 to June 1949.

Average discharge.--23 years, 2.16 million gallons a day (3.34 second-feet).

Extremes.--Maximum discharge during year, 695 million gallons a day (1,080 second-feet) Jan. 16 (gage height, 6.52 feet), from rating curve extended above 71 million gallons a day by test on model of station site; no flow for many days.
1926-49: Maximum discharge, 2,960 million gallons a day (4,580 second-feet) Nov. 18, 1930 (gage height, 11.58 feet), from rating curve extended above 71 million gallons a day by test on model of station site; no flow during dry weather.

Remarks.--Records good except those for days of faulty gage-height record, which are poor Continuous records of rainfall are obtained at station.

Revisions (fiscal year).--W 935: 1931(M).

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

-0.09	0	0.5	1.60	1.0	8.1	1.8	34.5
.1	.03	.6	2.5	1.1	10.1	2.1	53
.2	.16	.7	3.5	1.2	12.3	2.5	88
.3	.44	.8	4.8	1.4	17.7	3.0	144
.4	.96	.9	6.4	1.6	25		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0	0.01	0	0	0.8	0.03	0	0.01		
2	0	0	0	0	0	0	.2	.01	0	.01		
3	0	0	0	0	0	0	1.5	.91	0	0		
4	0	6.6	0	0	0	0	.06	1.52	0	0		
5	0	.28	0	0	0	0	.02	.53	0	0		
6	0	0	0	0	0	0	.7	.11	0	0		
7	0	0	0	0	1.23	0	.13	24.5	0	0		
8	0	0	0	0	.85	0	20.5	39	0	0		
9	0	0	0	0	.01	.2	6.6	5.8	0	0		
10	0	0	0	0	0	2.5	8.1	3.65	0	0		
11	0	0	0	0	0	3.5	2.9	1.96	0	0		
12	2.75	0	0	0	0	.15	1.41	1.09	0	0		
13	.01	0	0	0	0	.03	.75	1.37	1.00	0		
14	0	0	0	0	0	4.5	.38	.70	.01	0		
15	0	0	0	0	0	.9	2.0	.41	0	0		
16	0	4.1	0	0	0	7.5	171	.24	0	0		
17	.63	1.96	0	0	15	1.5	27	.11	0	0		
18	.08	.13	0	0	2.5	.3	10.6	.03	0	0		
19	0	.01	0	0	.15	.05	8.1	.02	0	0		
20	0	0	0	0	.02	.01	4.3	.01	0	0		
21	0	0	0	0	0	8.5	3.65	.01	0	0		
22	0	0	0	0	0	5	1.78	.01	0	0		
23	0	0	.09	0	.5	1.5	1.22	.01	0	0		
24	0	1.74	0	0	.05	.6	.86	.01	0	0		
25	0	.18	0	0	0	.2	19.1	0	0	0		
26	0	.01	0	0	.8	.07	4.6	0	0	0		
27	0	0	0	0	1.6	.02	1.41	0	0	0		
28	0	1.04	5.2	0	.1	.4	.70	0	0	0		
29	0	.06	2.5	0	.02	.05	.38	-	0	0		
30	0	.01	.18	0	0	9.0	.19	-	.43	0		
31	0	0	-	0	-	2.5	.10	-	.02	-		

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	2.75	0	0.112	0.173	3.47	11
August	6.6	0	.520	.805	16.1	49
September	5.2	0	.266	.412	7.97	24
October	.01	0	.0003	.0005	.01	.03
November	15	0	.761	1.18	22.8	70
December	9.0	0	1.58	2.44	49.0	150
Calendar year 1948	84	0	1.40	2.17	511	1,570
January	171	.02	9.71	15.0	301	924
February	39	0	2.93	4.53	82.0	252
March	1.00	0	.047	.073	1.46	4.5
April	.01	0	.001	.002	.02	.1
May	0	0	0	0	0	0
June	0	0	0	0	0	0
Fiscal year 1948-49	171	0	1.33	2.06	484	1,480

Peak discharge (base, 150 m.g.d.).--Jan. 8 (6:30 a.m.) 240 m.g.d. (371 sec.-ft.); Jan. 16 (7:30 p.m.) 695 m.g.d. (1,080 sec.-ft.); Feb. 7 (8 p.m.) 226 m.g.d. (350 sec.-ft.).
Note.--Faulty gage-height record Nov. 17 to Jan. 6; discharge computed on basis of records for Kalihi and Nuuanu Streams.

Kalihi Stream near Honolulu

Location.--Lat. 21°22'00", long. 157°50'45", at Kioi Pool, three-eighths of a mile upstream from Catholic Orphanage and 4.1 miles north of Honolulu post office. Datum of gage is 464.40 feet above mean sea level.

Drainage area.--2.7 square miles.

Records available.--September 1913 to June 1949.

Average discharge.--32 years (1916-20, 1921-49), 4.74 million gallons a day (7.33 second-feet).

Extremes.--Maximum discharge during year, 1,260 million gallons a day (1,950 second-feet) Jan. 16 (gage height, about 10.0 feet, from floodmark), from rating curve extended above 220 million gallons a day by test on model of station site; minimum, 0.47 million gallons a day (0.73 second-foot) June 10.

1913-49: Maximum discharge, 10,900 million gallons a day (16,900 second-feet) Nov. 18, 1930 (gage height, 13.81 feet), from rating curve extended above 220 million gallons a day by test on model of station site; minimum, 0.06 million gallons a day (0.09 second-foot) Oct. 22, 1933.

Remarks.--Records good except those for periods of fragmentary gage-height record, which are poor. Water for domestic use diverted from stream above station.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.8	0.60	1.4	8.7	3.0	54
.9	1.28	1.7	14.8	3.5	74
1.0	2.2	2.0	22	4.0	98
1.1	3.5	2.3	30.5	4.6	133
1.2	5.1	2.6	40	5.2	174

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.55	1.05	1.37	2.7	1.13	4.5	5.6	3.5	2.1	1.37	0.97	0.72
2	1.28	1.05	1.28	2.2	1.05	3.2	4.6	3.5	2.35	1.28	.90	.72
3	1.55	1.13	1.28	2.0	1.05	2.8	6.8	3.9	2.1	1.21	.90	.66
4	1.46	18.8	1.21	1.82	.97	3.2	3.8	27.5	2.0	1.13	.90	.66
5	1.28	3.35	1.21	1.73	.90	2.8	3.5	6.8	1.82	1.13	.90	.66
6	1.13	3.0	1.56	1.73	.84	5.2	4.3	4.5	1.73	1.13	.84	.60
7	1.05	2.1	2.35	1.64	4.6	4.0	3.25	35.5	1.64	1.05	.84	.60
8	1.13	1.64	1.37	1.55	3.0	4.1	28.5	59	3.25	1.05	.78	.60
9	1.05	1.55	1.28	1.55	1.37	5.1	10.6	10.8	1.82	.97	.78	.60
10	.97	1.28	1.21	1.37	1.13	7.4	10.2	8.0	1.64	.97	.78	.53
11	3.45	1.55	1.13	1.46	3.5	8.0	5.8	6.0	1.73	2.45	.78	.66
12	8.5	1.55	1.13	1.46	3.0	6.0	4.6	5.1	1.92	1.78	.78	.78
13	2.2	1.37	1.05	1.37	1.91	7.4	4.0	5.8	8.1	1.28	1.21	.84
14	1.64	1.28	.97	1.28	1.46	9.6	3.5	4.1	2.45	1.13	.84	.84
15	4.0	2.35	.97	1.28	1.46	5.4	5.5	4.5	2.0	1.21	.78	1.05
16	2.35	10.5	.90	1.21	5.4	10.1	181	4.1	1.73	1.13	.78	.78
17	2.85	4.8	.90	1.13	42	6.7	47	3.5	1.64	1.05	.72	.72
18	2.2	3.0	.90	1.13	11	4.5	25	3.25	1.55	.97	.72	.66
19	1.82	2.2	.97	1.13	5.4	4.0	17.0	2.85	1.73	.97	.72	.66
20	1.64	3.4	.97	1.37	3.4	4.6	13.0	3.0	1.55	.90	.72	.84
21	1.46	2.1	.90	1.21	4.5	9.8	11.0	2.6	1.37	.90	.66	.66
22	1.37	1.91	.90	1.37	4.3	7.2	7.4	2.35	1.64	.97	.60	.78
23	1.28	2.8	2.5	1.28	7.1	4.8	6.3	2.45	1.37	1.50	.60	.72
24	1.28	2.6	1.88	1.13	4.1	7.4	5.4	2.45	1.37	2.1	.66	.72
25	1.21	2.0	1.28	1.13	4.0	4.9	42	2.35	1.28	1.21	.66	.66
26	1.21	1.82	1.28	1.80	4.7	4.3	10.9	2.1	1.28	1.33	.60	.66
27	1.44	1.73	1.55	1.46	6.1	4.1	6.3	2.1	1.21	2.0	1.20	.66
28	1.55	3.35	27.5	1.28	4.3	6.6	5.1	2.0	2.15	1.28	1.59	.84
29	1.21	1.91	9.5	1.28	3.8	5.3	4.5	-	1.46	1.05	.97	1.1
30	1.13	1.73	4.1	1.21	4.0	16.7	4.0	-	1.89	1.05	.84	1.3
31	1.13	1.55	-	1.21	-	9.2	3.8	-	1.46	-	.78	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	8.5	0.97	1.85	2.86	57.4	176
August	18.8	1.05	2.92	4.52	90.4	278
September	27.5	.90	2.51	3.88	75.4	231
October	2.7	1.13	1.47	2.27	45.5	140
November	42	.84	4.72	7.30	141	434
December	16.7	2.8	6.09	9.42	189	580
Calendar year 1948	68	.90	4.12	6.37	1,510	4,630
January	181	3.25	15.9	24.6	494	1,520
February	59	2.0	7.99	12.4	224	686
March	8.1	1.21	1.98	3.06	61.3	188
April	2.45	.90	1.25	1.93	37.6	115
May	1.59	.60	.832	1.29	25.8	79
June	1.3	.53	.743	1.15	22.3	68
Fiscal year 1948-49	181	.53	4.01	6.20	1,460	4,500

Peak discharge (base, 500 m.g.d.).--Nov. 17 (3 a.m.) 550 m.g.d. (851 sec.-ft.); Jan. 16 (8 p.m.) 1,260 m.g.d. (1,950 sec.-ft.).

Note.--Fragmentary gage-height record Nov. 18 to Dec. 13, Jan. 16-18, Feb. 13-23, June 20-30; discharge computed from partly estimated gage-height record and records for nearby streams.

Nuuanu Stream below reservoir 2 wasteway, near Honolulu

Location.--Sharp-crested weirs, lat. 21°20'55", long. 157°49'40", on Pali road in upper Nuuanu Valley, a quarter of a mile downstream from reservoir 2 wasteway and 3.5 miles northeast of Honolulu post office. Datum of gage is 631.71 feet above mean sea level.
Drainage area.--3.4 square miles.
Records available.--October 1913 to June 1949.
Average discharge.--30 years (1917-20, 1922-49), 5.07 million gallons a day (7.84 second-feet).
Extremes.--Maximum discharge during year, 1,000 million gallons a day (1,550 second-feet) Jan. 16 (gage height, 6.06 feet), from rating curve extended above 300 million gallons a day by test on model of station site; minimum, 0.94 million gallons a day (1.45 second-feet) June 26.
1913-49: Maximum discharge, 4,520 million gallons a day (6,990 second-feet) Jan. 16, 1921 (gage height, 8.74 feet, from floodmarks), from rating curve extended above 300 million gallons a day by test on model of station site; minimum, 0.06 million gallons a day (0.09 second-foot) Sept. 10, 11, 1925.
Remarks.--Records good. Reservoirs 2, 3, and 4 (capacities, 21, 34, and 1,630 acre-feet, respectively) regulate flow only when cleaning reservoirs. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.
Revisions (fiscal years).--W 985: 1921-35(M).

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.90	1.0	3.65	1.9	32.5
.5	1.25	1.1	4.6	2.1	43
.6	1.65	1.2	6.5	2.4	61
.7	2.1	1.3	8.8	2.7	82
.8	2.6	1.5	14.9	3.0	105
.9	3.1	1.7	23	3.5	147

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	2.35	2.8	2.55	1.70	4.3	4.5	7.6	5.7	3.15	2.0	1.45
2	3.15	2.45	2.95	2.35	1.61	3.4	5.0	7.2	6.1	3.05	1.96	1.33
3	3.15	2.45	2.75	2.35	1.57	2.95	6.6	7.6	5.6	3.0	1.96	1.33
4	3.05	12.8	2.7	2.3	1.57	2.95	4.2	8.5	5.4	2.9	1.92	1.29
5	2.9	4.0	2.7	2.35	1.53	3.0	3.95	7.4	5.2	2.9	1.92	1.25
6	2.8	3.95	3.4	2.2	1.53	6.2	4.8	7.0	5.2	2.85	1.88	1.18
7	2.9	3.0	3.3	2.2	3.55	3.0	3.6	33	5.0	2.85	1.83	1.18
8	2.85	2.7	2.75	2.1	3.3	3.1	21.5	38.5	7.1	2.95	1.78	1.11
9	2.9	2.65	2.65	2.1	1.78	4.4	9.0	10.5	5.0	2.7	1.74	1.17
10	2.7	2.5	2.55	2.1	1.65	6.1	8.5	9.4	4.8	2.7	1.70	1.17
11	4.6	2.6	2.55	2.0	2.35	5.0	5.4	8.3	4.8	4.0	1.78	1.08
12	6.7	2.55	2.65	2.0	2.35	3.85	4.8	8.1	4.6	2.9	1.65	1.33
13	3.1	2.5	2.45	1.92	1.83	4.6	4.4	9.2	7.4	2.65	2.05	1.29
14	2.85	2.4	2.4	1.88	1.65	6.8	4.3	9.8	4.4	2.6	1.74	1.25
15	4.2	2.9	2.35	1.83	1.70	4.6	4.6	7.9	4.2	2.55	1.61	1.82
16	2.9	1.43	2.3	1.88	4.8	5.7	155	7.6	3.95	2.45	1.61	1.11
17	3.5	7.9	2.25	1.78	43	5.7	48	7.2	3.75	2.35	1.57	1.11
18	3.1	4.6	2.25	1.74	8.0	3.5	16.3	7.0	3.65	2.35	1.53	1.11
19	2.85	3.55	2.25	1.78	4.3	3.25	12.9	6.7	3.75	2.35	1.49	1.11
20	2.9	5.4	2.05	2.0	2.95	4.3	11.3	6.5	3.55	2.25	1.49	1.14
21	2.65	3.3	1.92	1.78	3.55	11.5	10.5	6.3	3.4	2.2	1.45	1.22
22	2.45	3.3	2.0	2.0	4.3	8.1	9.1	6.1	3.6	2.35	1.41	1.29
23	2.7	5.4	2.9	1.78	5.2	4.8	8.8	6.1	3.45	2.9	1.62	1.37
24	2.35	4.5	2.65	1.88	3.25	7.3	8.3	5.9	3.9	3.3	1.44	1.29
25	2.45	3.55	2.25	1.78	4.4	5.2	20.5	5.9	3.4	2.3	1.54	1.08
26	2.45	3.3	2.2	2.05	4.6	5.1	11.0	5.9	3.25	2.7	1.42	1.04
27	2.7	3.1	2.3	1.83	4.1	4.3	8.8	5.9	3.4	3.4	2.1	1.00
28	2.8	4.4	10.3	2.05	3.75	6.4	8.3	5.7	5.5	2.25	2.7	1.11
29	2.5	3.15	4.1	2.0	3.3	6.0	8.1	-	3.4	2.1	1.61	1.49
30	2.45	3.0	2.7	1.78	3.9	9.2	7.9	-	5.2	2.15	1.57	1.64
31	2.4	2.9	-	1.74	-	6.8	7.9	-	3.3	-	1.49	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.7	2.35	3.04	4.70	94.1	289
August	12.8	1.43	3.70	5.72	115	352
September	10.3	1.92	2.85	4.41	85.4	262
October	2.55	1.74	2.00	3.09	62.1	191
November	43	1.53	4.44	6.87	133	408
December	11.5	2.95	5.21	8.06	161	495
Calendar year 1948	43	1.43	4.75	7.35	1,740	5,330
January	155	3.6	14.4	22.3	448	1,370
February	38.5	5.7	9.39	14.5	263	807
March	7.4	3.25	4.55	7.04	141	433
April	4.0	2.1	2.70	4.18	81.2	249
May	2.7	1.41	1.73	2.68	53.6	164
June	1.82	1.00	1.24	1.92	37.3	115
Fiscal year 1948-49	155	1.00	4.59	7.10	1,670	5,140

Peak discharge (base, 60 m.g.d.).--Aug. 4 (1 p.m.) 101 m.g.d. (156 sec.-ft.); Nov. 17 (4:30 p.m.) 517 m.g.d. (800 sec.-ft.); Jan. 8 (6 a.m.) 93 m.g.d. (144 sec.-ft.); Jan. 16 (8 p.m.) 1,000 m.g.d. (1,550 sec.-ft.); Feb. 7 (7 p.m.) 195 m.g.d. (302 sec.-ft.).

West Branch Manoa Stream near Honolulu

Location.--Combined Parshall flume and concrete weir control, lat. 21°19'50", long. 157°48'15", 100 feet upstream from lower highway and 4 miles northeast of Honolulu post office. Datum of gage is 290.84 feet above mean sea level (Honolulu Board of Water Supply bench mark).
Drainage area.--1.1 square miles.
Records available.--August 1925 to June 1949. May 1913 to January 1921 at site 200 feet upstream.
Average discharge.--30 years (1913-20, 1926-49), 2.60 million gallons a day (4.02 second-feet).
Extremes.--Maximum discharge during year, 940 million gallons a day (1,450 second-feet) Nov. 17 (gage height, 5.37 feet), from rating curve extended above 33 million gallons a day by test on model of station site; minimum, 0.25 million gallons a day (0.39 second-foot) Nov. 7, June 10, 11.
1913-21, 1925-49: Maximum gage height, 10.4 feet, Jan. 16, 1921, from floodmarks, site and datum then in use (discharge, 2,100 million gallons a day or 3,250 second-feet, estimated from rating curve extended above 40 million gallons a day); minimum discharge, about 0.05 million gallons a day (0.08 second-foot) Mar. 16, 22, 1926.
Remarks.--Records good except those for period of no gage-height record, which are fair. Small quantity of water is diverted occasionally for irrigation.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used July 1-20, Aug. 7 to Sept. 8, Sept. 30 to Oct. 21, Mar. 2 to Apr. 18, May 4 to Sept. 1)

0.10	0.25	0.50	2.6	1.2	18.7
.20	.62	.60	3.5	1.5	34
.30	1.11	.80	6.7	2.0	71
.40	1.78	1.0	11.8		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.50	0.58	0.96	0.77	0.40	2.5	2.95	0.91	0.58	0.77	0.72	0.40
2	1.24	.66	.96	.58	.40	1.98	4.1	.86	1.02	.58	.62	.32
3	1.24	.77	.86	.55	.47	1.38	5.6	.91	.91	.51	.58	.32
4	1.77	3.85	.82	.55	.40	1.24	2.45	.82	.67	.47	.55	.36
5	1.36	.96	.72	.51	.36	1.11	2.25	.82	.58	.51	.55	.44
6	.96	3.8	1.57	.47	.29	2.35	2.6	.77	.51	.44	.55	.36
7	1.94	1.06	1.63	.47	4.0	1.11	1.71	9.0	.51	.51	.51	.32
8	3.05	.77	.82	.44	2.3	1.31	14.0	12.7	3.5	.76	.44	.29
9	1.54	.72	.72	.40	.62	2.75	4.7	2.6	.77	.44	.40	.29
10	.96	.55	.62	.44	.29	5.0	3.05	1.65	.62	.44	.40	.25
11	1.90	1.36	.62	.55	2.35	3.65	2.1	1.18	.72	4.7	.40	.25
12	4.9	.86	.86	.55	1.60	2.2	1.86	1.06	.58	2.55	.36	.47
13	1.24	.86	.62	.58	.86	2.5	1.58	1.24	2.0	1.06	1.02	.44
14	.91	.72	.55	.47	.62	5.7	1.44	3.3	.77	.82	.55	.40
15	2.2	4.2	.55	.47	.72	3.3	1.50	1.38	.62	.67	.51	1.77
16	.96	14.1	.51	.51	6.9	5.0	74	1.06	.55	.62	.47	.40
17	3.25	12.9	.51	.55	39	4.3	16.7	.91	.47	.55	.47	.36
18	1.44	5.1	.47	.55	6.0	2.2	7.2	.82	.40	.55	.44	.36
19	1.01	2.25	.47	.51	2.25	1.86	4.6	.77	.44	.55	.40	.44
20	.86	8.5	.47	.72	1.51	2.8	4.2	.72	.44	.55	.47	.44
21	.77	2.45	.47	.62	1.71	10.6	3.35	.67	.36	.51	.47	.58
22	.72	2.05	.58	a.68	2.7	7.6	2.35	.62	.51	.62	.44	.52
23	.67	5.2	3.65	a.50	5.7	4.8	2.25	.58	.47	1.76	.44	1.16
24	.62	5.6	2.0	a.41	2.05	6.0	2.05	.58	.98	1.60	.47	.84
25	.62	2.1	.91	a.40	1.51	4.6	5.5	.58	.44	.72	.51	.47
26	.62	1.58	.77	a.47	2.6	4.4	2.25	.58	.64	4.7	.55	.44
27	.96	1.65	1.01	.40	2.45	3.3	1.65	.58	.44	3.05	1.25	.36
28	1.20	3.4	5.4	.36	1.78	8.4	1.31	.62	4.9	1.38	2.5	.47
29	.72	1.58	2.05	.47	2.15	6.0	1.18	-	1.06	.91	.47	1.26
30	.67	1.31	1.11	.44	3.25	8.7	1.06	-	2.3	.91	.36	1.12
31	.62	1.11	-	.40	-	5.3	1.01	-	.96	-	.36	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.9	0.62	1.37	2.12	42.4	130
August	14.1	.55	2.99	4.63	92.6	284
September	5.4	.47	1.11	1.72	33.3	102
October	.77	.36	.509	.788	15.8	48
November	39	.29	3.24	5.01	97.2	298
December	10.6	1.11	4.00	6.19	124	380
Calendar year 1948	39	.29	2.28	3.53	836	2,560
January	74	1.01	5.89	9.11	183	560
February	12.7	.58	1.72	2.66	48.3	148
March	4.9	.36	.959	1.48	29.7	91
April	4.7	.44	1.14	1.76	34.2	105
May	2.5	.36	.588	.910	18.2	56
June	1.77	.25	.530	.820	15.9	49
Fiscal year 1948-49	74	.25	2.01	3.11	735	2,250

Peak discharge (base, 130 m.g.d.).--Nov. 17 (6:30 p.m.) 940 m.g.d. (1,450 sec.-ft.); Jan. 8 (6 a.m.) 140 m.g.d. (217 sec.-ft.); Jan. 16 (10 p.m.) 515 m.g.d. (797 sec.-ft.).
a No gage-height record; discharge computed on basis of records for nearby streams.

East Branch Manoa Stream near Honolulu

Location.--Combined Parshall flume and concrete weir control, lat. 21°19'50", long. 157°48'10", just downstream from highway bridge, 400 feet upstream from confluence with West Branch, and 4 miles northeast of Honolulu post office. Datum of gage is 294.50 feet above mean sea level (Honolulu Board of Water Supply bench mark).
Drainage area.--1.0 square mile.
Records available.--May 1913 to January 1921, August 1925 to June 1949.
Average discharge.--30 years (1913-20, 1926-49), 3.12 million gallons a day (4.83 second-feet).
Extremes.--Maximum discharge during year, 1,040 million gallons a day (1,610 second-feet) Nov. 17 (gage height, 5.52 feet), from rating curve extended above 21 million gallons a day by test on model of station site; minimum, 1.35 million gallons a day (2.09 second-feet) Nov. 6.
1913-21, 1925-49: Maximum gage height, 10.4 feet Jan. 16, 1921, from floodmarks, site and datum then in use (discharge, 2,000 million gallons a day or 3,090 second-feet, estimated from rating curve extended above 37 million gallons a day); minimum discharge, 0.4 million gallons a day (0.6 second-foot) June 7, 8, 1926.
Remarks.--Records good except those for periods of doubtful or no gage-height record, which are poor. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnels in drainage area.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 11 to Sept. 7, Sept. 29 to Oct. 25, Jan. 17-22, Jan. 26 to Feb. 22, May 5-14)

0.4	1.75	0.8	5.7	1.6	27.5
.5	2.55	.9	7.3	1.9	43
.6	3.5	1.1	11.4	2.2	64
.7	4.5	1.3	16.8		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.0	1.99	2.05	2.25	1.48	3.2	3.3	2.75	2.25	2.15	2.25	1.83
2	2.95	2.4	2.15	2.05	1.48	2.5	3.2	2.75	2.65	2.05	2.15	1.62
3	2.75	2.3	1.99	1.91	1.48	2.05	4.9	2.75	2.45	1.99	2.15	1.62
4	2.9	3.9	1.91	1.83	1.42	1.99	2.85	2.65	2.4	1.99	2.05	1.62
5	2.75	2.4	1.91	1.75	1.42	1.99	2.95	2.55	2.25	2.25	2.05	1.68
6	2.45	3.5	2.4	1.75	1.35	2.3	2.95	2.55	2.15	1.99	2.05	1.62
7	2.75	2.55	2.6	1.75	5.9	1.99	2.55	18.8	2.15	2.05	1.99	1.62
8	3.55	2.15	2.05	1.75	4.0	2.45	13.4	20	5.7	2.4	1.99	1.62
9	2.75	2.15	1.99	1.75	1.75	3.6	d5.9	3.4	2.3	2.05	1.91	1.62
10	2.45	1.99	1.99	1.68	1.68	4.9	d4.6	3.0	2.15	2.15	1.91	1.62
11	5.0	2.6	1.91	1.68	4.0	4.2	d2.95	2.55	2.55	8.9	1.99	1.75
12	9.0	2.25	2.05	1.83	2.8	3.3	d2.55	2.4	2.3	3.9	1.91	2.25
13	3.0	2.55	1.99	1.68	2.05	4.1	d2.4	2.4	3.9	2.55	2.8	1.91
14	a2.4	2.15	1.91	1.62	1.83	6.8	d2.3	3.0	2.45	2.3	1.91	1.75
15	a3.5	8.2	1.83	1.62	1.99	3.5	d2.25	2.45	2.3	2.3	1.83	3.15
16	a2.4	11.6	1.83	1.55	9.5	4.5	84	2.25	2.3	2.15	1.75	1.68
17	a5.0	11.3	1.83	1.48	54	3.8	22	2.3	2.25	2.15	1.75	1.68
18	a3.7	4.1	1.83	1.42	d5.3	2.65	6.1	2.25	2.15	2.05	1.75	1.68
19	a2.9	2.95	1.83	1.42	d3.0	2.45	5.1	2.25	2.25	2.05	1.75	1.68
20	a2.4	6.2	1.83	1.75	2.3	3.0	4.9	2.25	2.25	2.05	1.75	1.83
21	2.15	2.85	1.83	1.55	2.75	8.2	4.3	2.15	2.15	2.05	1.75	2.7
22	2.15	2.65	1.83	1.75	3.2	5.3	3.5	2.15	2.3	2.5	1.75	2.15
23	2.15	4.1	4.5	1.62	6.0	4.5	3.3	2.15	2.15	4.1	1.75	2.45
24	2.05	3.55	3.7	1.55	2.45	6.8	3.6	2.25	2.55	4.0	1.75	2.1
25	2.05	2.55	2.15	1.55	2.15	4.4	6.5	2.15	1.99	2.3	1.75	1.75
26	2.05	2.3	2.05	1.68	2.75	4.2	4.0	2.15	2.25	5.0	1.83	1.75
27	2.3	2.75	2.6	1.62	2.55	3.4	3.3	2.25	1.99	3.8	2.85	1.75
28	2.65	3.65	7.1	1.55	2.3	6.8	3.0	2.25	6.7	2.55	6.8	1.99
29	2.15	2.4	3.2	1.62	2.85	5.4	2.95	-	2.55	2.3	2.1	2.35
30	2.05	2.25	2.4	1.55	4.4	7.7	2.85	-	2.8	2.4	1.75	2.45
31	1.99	2.05	-	1.48	-	4.4	2.85	-	2.3	-	1.92	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	9.0	1.99	2.95	4.56	91.3	280
August	11.6	1.99	3.56	5.51	110	339
September	7.1	1.83	2.37	3.67	71.2	219
October	2.25	1.42	1.68	2.60	52.0	160
November	54	1.35	4.67	7.23	140	430
December	8.2	1.99	4.08	6.31	126	388
Calendar year 1948	54	1.35	3.62	5.60	1,330	4,070
January	84	2.25	7.14	11.0	221	679
February	20	2.15	3.67	5.68	103	315
March	6.7	1.99	2.61	4.04	80.9	248
April	8.9	1.99	2.75	4.25	82.5	253
May	6.8	1.75	2.12	3.28	65.7	202
June	3.15	1.62	1.91	2.96	57.3	176
Fiscal year 1948-49	84	1.35	3.29	5.09	1,200	3,690

Peak discharge (base, 120 m.g.d.).--Nov. 17 (6 p.m.) 1,040 m.g.d. (1,610 sec.-ft.); Jan. 16 (8 p.m.) 650 m.g.d. (1,010 sec.-ft.); Feb. 7 (8 p.m.) 184 m.g.d. (285 sec.-ft.).
a No gage-height record; discharge computed on basis of records for nearby streams.
d Doubtful gage-height record; discharge computed on basis of records for nearby streams.

Pukele Stream near Honolulu

Location.--Concrete weir control, lat. 21°18'35" (corrected), long. 157°47'30" (corrected), 200 feet upstream from bridge on Palolo Belt Road, five-eighths of a mile upstream from confluence with Waiomao Stream, and 4¾ miles east of Honolulu post office. Datum of gage is 344.78 feet above mean sea level (Honolulu Board of Water Supply bench mark).

Drainage area.--1.2 square miles.

Records available.--June 1926 to June 1949. April 1912 to September 1913 above present site and just below Mahoe Springs.

Average discharge.--23 years, 1.30 million gallons a day (2.01 second-feet).

Extremes.--Maximum discharge during year, 650 million gallons a day (1,010 second-feet) Nov. 17 (gage height, 5.86 feet), from rating curve extended above 36 million gallons a day by test on model of station site; minimum, 0.19 million gallons a day (0.29 second-foot) Nov. 7.

1912-13, 1926-49: Maximum discharge, 1,680 million gallons a day (2,600 second-feet) Apr. 11, 1930 (gage height, 7.75 feet, from floodmarks), from rating curve extended above 14 million gallons a day by test on model of station site; minimum, 0.07 million gallons a day (0.11 second-foot) Nov. 15-25, 1945.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. A 2-inch pipe diverts water from stream above station.

Revisions (fiscal year).--W 835: 1930(M).

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.60	0.39	0.50	0.39	0.22	1.9	1.7	0.84	0.60	0.39	0.53	0.39
2	.60	.36	.53	.39	.22	1.2	1.5	.88	.60	.39	.46	.39
3	.53	.36	.50	.39	.22	.95	1.7	.85	.60	.39	.46	.39
4	.53	.36	.50	.42	.22	.85	1.1	.80	.67	.39	.46	.39
5	.53	.32	.50	.42	.22	.80	1.1	.78	.67	.39	.46	.39
6	.53	.32	.42	.42	.22	.90	1.14	.78	.60	.39	.46	.39
7	.53	.32	.39	.42	1.24	.90	1.09	10	.60	.39	.39	.39
8	.53	.32	.36	.42	.60	1.0	8.9	15	.67	.32	.39	.39
9	.53	.32	.32	.42	.28	1.4	4.0	3.0	.60	.32	.39	.39
10	.53	.32	.32	.42	.26	1.8	2.7	1.8	.60	.32	.39	.39
11	.82	.36	.32	.39	.26	2.7	1.75	1.3	.60	1.06	.39	.39
12	1.83	.36	.32	.36	.26	2.7	1.5	.95	.53	.53	.39	.39
13	.50	.32	.30	.32	.26	2.6	1.3	.72	1.74	.39	.39	.32
14	.46	.30	.30	.30	.26	3.5	1.1	.70	.53	.39	.32	.32
15	1.02	.92	.28	.30	.26	2.5	1.0	.70	.53	.39	.32	.32
16	.50	1.94	.28	.30	1.53	2.7	81	.69	.53	.39	.32	.32
17	.50	1.09	.30	.30	20	2.7	40	.68	.53	.39	.32	.28
18	.53	.50	.30	.30	6.0	1.7	8.0	.68	.53	.39	.32	.28
19	.53	.46	.30	.30	2.3	1.3	6.0	.67	.53	.39	.32	.24
20	.53	.92	.30	.30	1.6	1.4	3.8	.67	.53	.39	.32	.24
21	.50	.53	.30	.28	1.4	4.7	3.0	.67	.53	.39	.32	.28
22	.50	.53	.30	.28	1.5	3.0	2.0	.67	.46	.39	.32	.24
23	.50	.56	.28	.28	2.0	2.0	1.7	.67	.46	.46	.28	.24
24	.50	.56	.28	.26	1.4	2.6	1.5	.67	.46	.46	.28	.24
25	.50	.53	.28	.24	1.3	2.5	1.6	.67	.46	.46	.28	.24
26	.50	.53	.30	.24	1.1	2.5	1.9	.67	.46	.46	.28	.28
27	.53	.53	.30	.24	1.0	2.1	1.5	.67	.46	.53	.28	.39
28	.46	.85	1.27	.22	.90	2.6	1.3	.60	.46	.53	1.04	.39
29	.42	.53	.52	.22	.90	3.7	1.1	-	.46	.53	.39	.46
30	.42	.50	.42	.22	2.0	5.0	1.0	-	.46	.53	.32	.46
31	.39	.50	-	.22	-	2.7	.87	-	.39	-	.32	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.83	0.39	0.577	0.893	17.9	55
August	1.94	.30	.539	.834	16.7	51
September	1.27	.28	.386	.597	11.6	36
October	.42	.22	.322	.498	9.98	31
November	20	.22	1.66	2.57	49.9	153
December	5.0	.80	2.22	3.43	68.9	211
Calendar year 1948	30	.22	1.47	2.27	538	1,650
January	81	.87	6.06	9.38	188	576
February	15	.60	1.71	2.65	47.8	147
March	1.74	.39	.576	.891	17.8	55
April	1.06	.32	.438	.678	13.1	40
May	1.04	.28	.384	.594	11.9	37
June	.46	.24	.341	.528	10.2	31
Fiscal year 1948-49	81	.22	1.27	1.96	464	1,420

Peak discharge (base, 90 m.g.d.).--Nov. 17 (3 p.m.) 650 m.g.d. (1,010 sec.-ft.); Jan. 16 (8 p.m.) 530 m.g.d. (820 sec.-ft.).

Note.--No gage-height record Nov. 17 to Jan. 5, Jan. 12-15, Jan. 17 to Feb. 24; discharge computed on basis of records for nearby streams.

Waiomao Stream above Pukele Stream, near Honolulu

Location (corrected).--Concrete weir control, lat. 21°18'30", long. 157°47'10", 300 feet west of road, 1 mile upstream from confluence with Pukele Stream, and 5 miles east of Honolulu post office. Datum of gage is 373.66 feet above mean sea level (Honolulu Board of Water Supply bench mark).
Drainage area.--1.0 square mile.
Records available.--June 1926 to June 1949. April 1911 to December 1912 at highway bridge below present site.
Average discharge.--23 years, 1.17 million gallons a day (1.81 second-feet).
Extremes.--Maximum discharge during year, 505 million gallons a day (781 second-feet) Nov. 17 and Jan. 16, from rating curve extended above 45 million gallons a day by test on model of station site; maximum gage height, 5.17 feet Jan. 16; no flow at times.
1911-12, 1926-49: Maximum discharge, 602 million gallons a day (931 second-feet) Oct. 15, 1938 (gage height, 5.43 feet), from rating curve extended above 45 million gallons a day by test on model of station site; no flow at times.
Remarks.--Records good except those for period of faulty gage-height record, which are fair. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.92	0	1.4	1.15	1.9	7.2	2.4	24
1.0	.01	1.5	1.83	2.0	9.4	2.6	33.5
1.1	.10	1.6	2.7	2.1	12.0	2.8	44
1.2	.30	1.7	3.85	2.2	15.5	3.0	55
1.3	.63	1.8	5.3	2.3	19.5		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.30	0.07	0.18	0.22	0	1.42	1.15	0.28	0.07	0.18	0.16	0.26
2	.33	.10	.19	.14	0	.79	.89	.41	.20	.10	.12	.18
3	.61	.14	.16	.10	0	.56	1.27	.28	.20	.08	.10	.12
4	.22	.35	.12	.08	0	.43	.60	.24	.31	.06	.09	.09
5	.22	.25	.11	.06	0	.33	.60	.22	.24	.10	.09	.09
6	.18	.31	.19	.05	0	.50	.63	.20	.14	.07	.07	.06
7	.12	.20	.24	.04	.82	.46	.53	7.4	.08	.07	.06	.06
8	.14	.13	.12	.03	1.85	.56	12.0	21	.66	.10	.05	.04
9	.18	.12	.07	.03	.33	.95	5.2	2.8	.26	.07	.02	.01
10	.23	.07	.06	.01	.18	1.28	3.0	1.49	.18	.05	.03	.01
11	.07	.18	.06	.01	.48	2.15	1.70	1.05	.20	2.1	.02	.01
12	1.50	.16	.08	.03	.37	2.15	1.29	.73	.24	1.04	.01	.26
13	1.59	.17	.06	.04	.26	1.88	.89	.53	2.0	.37	.17	.26
14	.73	.11	.02	.01	.16	2.8	.63	.50	.53	.20	.16	.16
15	.91	1.5	.01	.01	.16	1.74	.53	.56	.28	.16	.05	.16
16	.99	3.0	.01	0	1.11	1.99	59	.40	.20	.22	.03	.10
17	.63	1.6	.01	0	30.5	2.1	34	.33	.16	.18	.02	.06
18	.56	.70	.01	0	5.8	1.05	6.7	.30	.10	.12	.01	.05
19	.40	.40	0	0	1.62	.73	5.0	.28	.14	.10	.01	.04
20	.26	1.4	0	0	.94	.82	3.15	.24	.12	.09	.01	.58
21	.19	.60	0	0	.79	3.85	2.55	.22	.09	.10	0	.78
22	.15	.30	0	0	.84	2.2	1.42	.18	.12	.13	0	.30
23	.13	.74	.20	.05	1.62	1.15	1.10	.16	.10	.67	0	.86
24	.11	.60	.47	.01	.99	2.0	.89	.14	.16	1.06	0	.28
25	.11	.35	.20	.01	.84	1.83	.99	.10	.14	.30	0	.18
26	.11	.25	.18	0	1.10	1.81	1.31	.10	.09	.43	0	.12
27	.16	.30	.42	.01	.68	1.22	.63	.08	.08	.92	.57	.08
28	.19	1.1	2.15	.01	.50	2.05	.53	.10	.18	.43	2.2	.14
29	.12	.45	.94	0	.50	3.1	.46	-	.22	.26	.80	.22
30	.11	.30	.37	0	1.57	4.0	.37	-	.22	.22	.33	.42
31	.10	.25	-	0	-	2.15	.30	-	.16	-	.24	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.59	0.07	0.376	0.582	11.6	36
August	3.0	.07	.523	.809	16.2	50
September	2.15	0	.221	.342	6.63	20
October	.22	0	.031	.048	.95	2.9
November	30.5	0	1.80	2.79	54.0	166
December	4.0	.33	1.61	2.49	50.0	154
Calendar year 1948	33.5	0	1.25	1.93	459	1,410
January	59	.30	4.82	7.46	149	458
February	21	.08	1.44	2.23	40.3	124
March	2.0	.07	.254	.393	7.87	24
April	2.1	.05	.333	.515	9.98	31
May	2.2	0	.175	.271	5.42	17
June	.86	.01	.199	.308	5.98	18
Fiscal year 1948-49	59	0	.982	1.52	358	1,100

Peak discharge (base, 70 m.g.d.).--Nov. 17 (5 p.m.) 505 m.g.d. (781 sec.-ft.); Jan. 16 (9 p.m.) 505 m.g.d. (781 sec.-ft.); Feb. 7 (9:30 p.m.) 82 m.g.d. (127 sec.-ft.).
Note.--Faulty intake action July 20 to Sept. 7; discharge computed on basis of records for nearby streams.

Haiku Stream near Heeia

Location.--Lat. 21°24'40", long. 157°49'40", on left bank of stream, 1.7 miles west of Kaneohe post office and 1.8 miles southwest of Heeia. Datum of gage is 271.9 feet above mean sea level (levels by city and county of Honolulu).

Drainage area.--1.0 square mile.

Records available.--January 1914 to October 1919, July 1939 to June 1949.

Average discharge.--15 years (1914-19, 1939-49), 2.33 million gallons a day (3.61 second-feet).

Extremes.--Maximum discharge during year, 480 million gallons a day (743 second-feet) Jan. 16 (gage height, 4.24 feet), from rating curve extended above 13 million gallons a day by test on model of station site; minimum, 0.43 million gallons a day (0.66 second-foot) June 10.

1914-19, 1939-49: Maximum discharge, 952 million gallons a day (1,470 second-feet) Jan. 13, 1943 (gage height, 4.99 feet), from rating curve extended above 13 million gallons a day by test on model of station site; minimum, 0.17 million gallons a day (0.26 second-foot) Oct. 25, 1946.

Remarks.--Records good except those for period of no gage-height record, which are fair. Suburban Water System diverts ground water from tunnel in drainage area.

Revisions (fiscal year).--W 935: 1940.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.03	0.97	0.88	0.92	0.75	1.1	1.34	1.52	1.08	0.97	1.03	0.72
2	1.03	1.06	.88	.84	.75	1.0	1.18	1.45	1.13	.97	.97	.72
3	1.03	.97	.88	.84	.75	.95	1.13	1.45	1.13	.88	.92	.72
4	1.03	2.15	.88	.84	.75	.90	1.08	1.65	1.08	.88	.92	.72
5	1.03	1.18	.88	.84	.75	.85	1.08	1.45	1.08	.84	.92	.72
6	1.03	1.03	.84	.80	.75	.80	1.08	1.45	1.08	.88	.92	.72
7	1.03	.97	.84	.80	3.2	.80	1.08	9.8	1.03	.88	.92	.72
8	1.03	.97	.84	.80	2.3	.85	6.3	18.1	1.08	.88	.92	.72
9	.97	.97	.80	.80	.95	.90	2.1	3.1	1.03	.88	.88	.69
10	.97	.92	.80	.84	.80	.95	1.52	2.2	1.03	.88	.88	.61
11	1.33	.92	.80	.84	.85	1.1	1.40	1.84	1.08	.97	.88	.57
12	2.9	.92	.80	.80	.75	1.1	1.34	1.64	1.08	.97	.84	.83
13	1.40	.92	.80	.80	.75	.95	1.24	1.52	1.13	.92	.88	.69
14	1.08	.92	.80	.80	.75	2.4	1.18	1.40	1.08	.92	.88	.57
15	1.13	1.00	.80	.80	.75	1.6	1.97	1.40	1.08	.97	.84	.65
16	1.13	1.33	.80	.76	.75	1.5	73	1.34	1.08	.97	.84	.50
17	1.18	1.03	.80	.76	4.5	1.4	19.6	1.34	1.03	.97	.84	.50
18	1.13	1.03	.80	.76	2.2	1.3	4.6	1.29	.97	.92	.80	.50
19	1.08	.97	.80	.76	1.3	1.3	3.6	1.29	.97	.92	.80	.53
20	1.03	.97	.84	.76	1.1	1.2	3.05	1.18	.97	.92	.80	.53
21	1.03	.92	.84	.76	.95	1.4	2.4	1.18	.97	.92	.76	.53
22	.97	.97	.84	.76	.95	1.3	1.90	1.13	.97	.92	.76	.65
23	.97	.97	.96	.76	.95	1.2	1.78	1.13	.97	.97	.76	.80
24	.97	.97	1.08	.76	.85	1.2	1.58	1.08	.92	.97	.76	.80
25	.97	.92	.92	.76	.85	1.2	19.5	1.08	.92	.97	.76	.80
26	.92	.92	.84	.76	.85	1.24	5.0	1.08	.92	.97	.80	.80
27	.97	.92	.88	.76	1.3	1.13	2.4	1.08	.92	.92	.76	.80
28	.92	1.24	1.61	.76	.95	1.24	1.90	1.08	.97	.92	.76	.80
29	.92	.97	1.24	.75	1.0	1.18	1.71	-	.97	.97	.72	.80
30	.92	.92	1.03	.75	.95	1.40	1.64	-	1.08	1.03	.72	.84
31	.92	.88	-	.75	-	1.52	1.58	-	1.03	-	.72	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	2.9	0.92	1.10	1.70	34.0	104
August	2.15	.88	1.03	1.59	31.8	98
September	1.61	.80	.893	1.38	26.8	82
October	.92	.75	.790	1.22	24.5	75
November	4.5	.75	1.17	1.81	35.0	108
December	2.4	.80	1.19	1.84	37.0	113
Calendar year 1948	35	.75	1.48	2.29	540	1,660
January	73	1.08	5.49	8.49	170	523
February	18.1	1.08	2.33	3.61	65.2	200
March	1.13	.92	1.03	1.59	31.9	98
April	1.03	.84	.932	1.44	28.0	86
May	1.03	.72	.837	1.30	26.0	80
June	.84	.50	.685	1.06	20.6	63
Fiscal year 1948-49	73	.50	1.45	2.24	531	1,630

Peak discharge (base, 100 m.g.d.).--Nov. 17 (time unknown) 153 m.g.d. (237 sec.-ft.); Jan. 8 (6 a.m.) 101 m.g.d. (156 sec.-ft.); Jan. 16 (8:30 p.m.) 480 m.g.d. (743 sec.-ft.); Jan. 25 (7 p.m.) 136 m.g.d. (210 sec.-ft.); Feb. 7 (9 p.m.) 115 m.g.d. (178 sec.-ft.).

Note.--No gage-height record Oct. 28 to Dec. 25; discharge computed on basis of recorded range in stage and records for Iolekaa Stream near Heeia.

Iolekaa Stream mauka near Heeia

Location.--Columbus-type concrete control, lat. 21°25'15" (corrected), long. 157°49'50", 0.7 mile upstream from confluence with Haiku Stream, 1.5 miles southwest of Heeia, and 1.8 miles west of Kaneohe post office. Datum of gage is 320 feet ± 1.0 foot above mean sea level (transit levels by U. S. Navy).

Drainage area.--0.8 square mile.

Records available.--March 1940 to June 1949.

Extremes.--Maximum discharge during year, 14.9 million gallons a day (23.1 second-feet) Jan. 16 (gage height, 1.61 feet); minimum, 0.25 million gallons a day (0.39 second-foot) Nov. 3-6, 13-17.

1940-49: Maximum discharge, 69 million gallons a day (107 second-feet) Oct. 22, 1941 (gage height, 2.40 feet), from rating curve extended above 1.0 million gallons a day by rating for Columbus-type control and test on model of station site; minimum daily, 0.10 million gallons a day (0.16 second-foot) Oct. 31 to Nov. 9, Nov. 24, 27, 1946.

Remarks.--Records good except those for period of faulty gage-height record, which are poor.

Revisions (fiscal years).--W 935: 1940.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 29 to Sept. 14, May 28 to June 7)

0.5	0.20	0.9	1.45
.6	.32	1.0	2.15
.7	.52	1.1	3.0
.8	.88	1.2	4.3

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.32	0.30	0.27	0.26	0.26	0.36	0.40	0.32	0.27	0.27	0.28	0.27
2	.32	.31	.27	.26	.26	.32	.38	.32	.27	.27	.28	.27
3	.32	.30	.27	.26	.25	.31	.34	.32	.26	.27	.28	.27
4	.32	.37	.27	.26	.25	.30	.32	.33	.26	.26	.28	.27
5	.31	.31	.27	.26	.25	.28	.32	.33	.26	.26	.28	.27
6	.31	.30	.27	.26	.25	.27	.32	.35	.26	.26	.28	.27
7	.31	.30	.28	.26	.86	.27	.30	1.5	.26	.27	.28	.27
8	.31	.30	.27	.27	.67	.28	1.31	1.2	.27	.27	.28	.27
9	.31	.30	.26	.27	.31	.30	.74	.35	.26	.26	.28	.27
10	.31	.30	.26	.27	.27	.31	.60	.33	.26	.26	.28	.27
11	.51	.30	.26	.27	.28	.34	.42	.31	.26	.28	.28	.28
12	1.09	.30	.26	.27	.26	.34	.36	.30	.26	.27	.28	.57
13	.38	.30	.26	.27	.25	.31	.34	.30	.32	.26	.28	.31
14	.34	.30	.26	.26	.25	.68	.32	.29	.27	.26	.28	.28
15	.34	.31	.26	.26	.25	.44	.48	.29	.26	.26	.28	.33
16	.32	.36	.26	.26	.25	.41	4.0	.29	.26	.27	.28	.28
17	.34	.30	.26	.27	1.15	.36	1.5	.29	.26	.26	.28	.28
18	.32	.30	.26	.28	.64	.34	.45	.29	.26	.27	.28	.30
19	.32	.30	.26	.27	.42	.34	.50	.29	.26	.27	.28	.30
20	.32	.30	.26	.28	.34	.32	.42	.28	.26	.27	.28	.31
21	.32	.30	.26	.27	.31	.38	.35	.28	.26	.28	.28	.31
22	.32	.30	.26	.28	.31	.34	.30	.27	.27	.28	.28	.30
23	.31	.30	.28	.27	.31	.32	.28	.27	.26	.28	.28	.30
24	.31	.31	.28	.27	.28	.32	.26	.27	.26	.28	.28	.30
25	.31	.30	.26	.27	.28	.31	.35	.27	.26	.28	.28	.30
26	.31	.30	.26	.27	.28	.31	.31	.27	.26	.28	.30	.30
27	.31	.30	.27	.27	.41	.31	.30	.27	.26	.28	.31	.30
28	.31	.36	.38	.27	.31	.46	.30	.27	.29	.28	.31	.30
29	.31	.28	.30	.26	.32	.38	.30	-	.28	.28	.27	.31
30	.30	.28	.26	.26	.31	.46	.31	-	.41	.28	.27	.31
31	.30	.27	-	.26	-	.46	.31	-	.28	-	.27	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.09	0.30	0.349	0.540	10.8	33
August	.37	.27	.305	.472	9.46	29
September	.38	.26	.270	.418	8.10	25
October	.28	.26	.267	.413	8.27	25
November	1.15	.25	.361	.559	10.8	33
December	.68	.27	.353	.546	10.9	34
Calendar year 1948	2.25	.22	.336	.520	123	377
January	4.0	.26	.555	.859	17.2	53
February	1.5	.27	.373	.577	10.4	32
March	.41	.26	.271	.419	8.39	26
April	.28	.26	.271	.419	8.12	25
May	.31	.27	.282	.436	8.73	27
June	.57	.27	.299	.463	8.97	28
Fiscal year 1948-49	4.0	.25	.330	.511	120	370

Peak discharge (base, 15 m.g.d.).--No peak above base.

Note.--Intake action faulty Jan. 16 to Feb. 28; discharge computed on basis of records for nearby streams.

Kahaluu Stream near Heeia

Location.--Modified Parshall flume, lat. 21°26'20", long. 157°51'05", 40 feet upstream from intake of Libby ditch, half a mile upstream from forest-reserve boundary, and 3.5 miles northwest of Kaneohe. Datum of gage is 357.52 (corrected) feet above mean sea level (levels by Wright, Harvey & Wright).
Drainage area.--0.4 square mile.
Records available.--October 1935 to June 1949.
Average discharge.--13 years (1936-49), 2.68 million gallons a day (4.15 second-feet).
Extremes.--Maximum discharge during year, 65 million gallons a day (101 second-feet) Jan. 16 (gage height, 2.98 feet), from rating curve extended above 9 million gallons a day by test on model of station site; minimum, 0.24 million gallons a day (0.37 second-foot) Oct. 18, 19, 21.
1935-49: Maximum discharge, 290 million gallons a day (449 second-feet) Sept. 27, 1937 (gage height, 5.47 feet, control then in use), from rating curve computed from 11 to 240 million gallons a day by Parshall flume formula and extended above; minimum daily, 0.07 million gallons a day (0.11 second-foot) Mar. 19, 1947.
Remarks.--Records good except those for period of no gage-height record, which are fair. Suburban Water System diverts ground water from tunnel in drainage area. Continuous records of rainfall are obtained at the station.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 5-28, Jan. 17 to Mar. 2, Mar. 30 to Apr. 19, May 27 to June 2)

0.2	0.42	0.7	3.75
.3	.84	.8	4.8
.4	1.40	.9	6.0
.5	2.05	1.1	9.1
.6	2.85	1.3	12.5

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.36	0.33	0.36	0.36	0.30	0.39	0.50	0.39	0.33	0.39	0.42	0.33
2	.36	.36	.36	.36	.30	.36	.46	.39	.35	.39	.42	.33
3	.33	.36	.39	.36	.30	.36	.42	.39	.39	.42	.42	.30
4	.33	.50	.36	.33	.30	.36	.42	.42	.39	.42	.42	.33
5	.33	.39	.36	.30	.30	.36	.42	.42	.39	.42	.42	.33
6	.33	.36	.36	.30	.30	.33	.42	.42	.39	.42	.42	.33
7	.33	.36	.42	.33	1.22	.33	.42	2.4	.39	.42	.42	.33
8	.33	.36	.36	.33	.69	.33	1.67	2.05	.39	.42	.42	.30
9	.33	.36	.33	.33	.36	.33	.94	.46	.39	.42	.42	.33
10	.30	.36	.30	.33	.36	.36	.68	.42	.39	.42	.39	.33
11	.58	.36	.30	.33	.42	.39	.50	.39	.39	.42	.39	.33
12	1.79	.36	.30	.33	.42	.36	.42	.39	.47	.42	.39	.50
13	.39	.36	.30	.30	.36	.36	.42	.39	.48	.42	.42	.42
14	.36	.36	.30	.30	.36	.46	.42	.36	.39	.42	.42	.36
15	.36	.36	.30	.30	.36	.46	.81	.36	.39	.42	.42	.73
16	.36	.58	.30	.27	.36	a.45	13.1	.36	.39	.42	.42	.36
17	.36	.39	.30	.27	2.25	a.43	2.05	.36	.36	.42	.42	.36
18	.36	.39	.30	.27	.70	a.41	.53	.36	.36	.42	.39	.33
19	.36	.36	.30	.27	.42	a.38	.65	.36	.39	.42	.39	.33
20	.36	.33	.30	.27	.36	a.36	.45	.36	.39	.42	.39	.36
21	.36	.33	.30	.27	.33	a.50	.42	.33	.39	.42	.36	.36
22	.36	.33	.27	.27	.35	a.42	.33	.33	.39	.42	.36	.36
23	.36	.39	.33	.27	.39	a.42	.30	.33	.39	.42	.36	.36
24	.36	.46	.42	.27	.33	.57	.27	.33	.39	.42	.36	.33
25	.36	.36	.33	.30	.33	.50	.53	.33	.36	.42	.39	.33
26	.36	.36	.33	.30	.33	.42	.44	.33	.36	.42	.47	.33
27	.36	.36	.33	.30	.33	.42	.33	.33	.36	.42	.55	.33
28	.36	.86	.44	.30	.36	.42	.33	.33	.52	.42	.42	.33
29	.36	.42	.88	.30	.36	.46	.36	-	.39	.42	.36	.33
30	.36	.39	.39	.30	.39	.92	.36	-	.39	.42	.33	.33
31	.33	.36	-	.30	-	.79	.39	-	.39	-	.33	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.79	0.30	0.405	0.627	12.5	38
August	.86	.33	.394	.610	12.2	37
September	.88	.27	.354	.548	10.6	33
October	.36	.27	.304	.470	9.42	29
November	2.25	.30	.465	.719	13.9	43
December	.92	.33	.432	.668	13.4	41
Calendar year 1948	5.6	.22	.556	.860	203	623
January	13.1	.27	.960	1.49	29.8	91
February	2.4	.33	.503	.778	14.1	43
March	.52	.33	.392	.607	12.1	37
April	.42	.39	.418	.647	12.5	38
May	.55	.33	.404	.625	12.5	38
June	.73	.30	.357	.552	10.7	33
Fiscal year 1948-49	13.1	.27	.449	.695	164	501

Peak discharge (base, 30 m.g.d.).--Nov. 17 (3 p.m.) 36.5 m.g.d. (56.5 sec.-ft.); Jan. 16 (7:30 p.m.) 65 m.g.d. (101 sec.-ft.).
a No gage-height record; discharge computed on basis of recorded range in stage and records for nearby streams.

Waihee Stream near Heeia

Location.--Modified Parshall flume, lat. 21°27'05", long. 157°51'35", 70 feet upstream from intake of Kihe ditch, 120 feet downstream from forest-reserve boundary, and 4.1 miles northwest of Kaneohe. Altitude of gage, 193 feet (from topographic map).

Drainage area.--1.1 square miles.

Records available.--December 1935 to June 1949.

Average discharge.--13 years (1936-49), 6.46 million gallons a day (10.0 second-feet).

Extremes.--Maximum discharge during year, 330 million gallons a day (511 second-feet) Jan. 16 (gage height, 5.26 feet), from rating curve extended above 50 million gallons a day by test on model of station site; minimum, 4.8 million gallons a day (7.4 second-feet) Jan. 23.

1935-49: Maximum discharge, 465 million gallons a day (719 second-feet) Feb. 28, 1939 (gage height, 5.47 feet, control then in use), from rating curve computed from 20 to 230 million gallons a day by Parshall flume formula and extended above; minimum, 3.2 million gallons a day (5.0 second-feet) Oct. 1, 1946.

Remarks.--Records good except those for period of no gage-height record, which are fair. A 2-inch pipe line diverts water above station for domestic use.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.8	6.8	6.9	6.4	5.8	6.0	6.0	6.0	5.8	5.8	5.5	5.2
2	6.8	6.9	6.9	6.4	5.8	5.7	5.8	6.4	6.0	5.8	5.5	5.2
3	6.9	6.8	6.9	6.3	5.8	5.5	5.7	6.1	6.0	5.8	5.5	5.4
4	6.9	7.7	6.9	6.3	5.8	5.5	5.5	6.1	6.0	6.0	5.5	5.4
5	6.9	6.9	6.9	6.3	5.8	5.4	5.4	6.1	6.0	6.0	5.5	5.4
6	6.9	6.8	7.0	6.3	5.8	5.4	5.7	6.0	6.0	6.0	5.5	5.4
7	6.9	6.8	6.9	6.3	7.9	5.2	5.5	14.2	5.8	6.0	5.5	5.2
8	6.9	6.8	6.8	6.3	6.7	5.4	9.3	17.5	5.8	5.8	5.5	5.2
9	6.9	6.8	6.6	6.3	5.8	5.5	8.6	8.3	5.7	5.8	5.5	5.2
10	6.9	6.8	6.8	6.3	5.7	5.5	7.2	7.4	5.7	5.8	5.5	5.2
11	9.7	6.8	6.6	6.3	6.6	5.5	6.4	6.9	5.7	6.0	5.5	5.5
12	20.5	6.8	6.6	6.3	6.3	5.7	6.1	6.8	6.6	6.0	5.4	6.5
13	7.6	6.8	6.6	6.3	5.8	5.7	6.0	6.6	6.3	6.0	5.5	5.7
14	7.2	6.8	6.6	6.3	5.7	6.3	5.8	6.4	5.8	6.0	5.4	5.7
15	7.2	6.9	6.6	6.3	5.7	6.3	7.4	6.4	5.8	6.0	5.4	5.7
16	6.9	7.6	6.6	6.3	5.8	6.1	58	6.4	5.8	6.0	5.4	5.4
17	7.2	6.8	6.6	6.1	12.9	6.0	21	6.4	5.8	5.8	5.4	5.4
18	7.1	6.8	6.6	6.1	6.8	5.8	11.6	6.4	5.8	5.8	5.4	5.4
19	6.8	6.8	6.6	6.1	6.1	5.8	10.8	6.4	6.0	5.8	5.4	5.4
20	6.8	6.8	6.6	6.1	5.8	5.5	9.2	6.3	6.0	5.7	5.4	5.8
21	6.8	6.8	6.4	6.0	5.8	6.0	7.2	6.1	6.0	5.7	5.4	5.5
22	6.9	6.8	6.4	6.0	5.7	5.7	6.6	6.1	6.1	5.7	5.4	5.4
23	6.9	6.8	7.2	6.0	5.7	5.5	5.5	6.1	6.0	5.7	5.4	5.2
24	6.9	6.9	7.4	6.0	5.5	6.6	5.8	6.1	5.8	5.7	5.4	5.2
25	6.9	6.8	6.6	6.1	5.5	6.3	7.0	6.1	5.8	5.7	5.4	5.1
26	6.9	6.8	6.4	6.1	5.5	5.8	6.9	6.0	5.8	5.7	5.7	5.2
27	6.9	6.8	6.4	6.1	5.5	5.8	6.4	5.8	6.0	5.7	5.8	5.2
28	6.9	7.6	7.2	6.1	5.7	6.0	6.0	5.8	8.1	5.5	5.8	5.2
29	6.8	7.0	7.4	6.0	5.8	6.3	6.0	-	6.0	5.5	5.5	5.2
30	6.8	7.0	6.6	6.0	6.0	7.4	6.0	-	6.0	5.5	5.4	5.1
31	6.8	6.9	-	5.8	-	6.6	6.0	-	5.8	-	5.2	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	20.5	6.8	7.46	11.5	231	710
August	7.7	6.8	6.91	10.7	214	657
September	7.4	6.4	6.75	10.4	203	622
October	6.4	5.8	6.18	9.56	192	588
November	12.9	5.5	6.17	9.55	185	568
December	7.4	5.2	5.86	9.07	182	558
Calendar year 1948	52	5.2	6.92	10.7	2,530	7,770
January	58	5.4	8.92	13.8	276	848
February	17.5	5.8	7.04	10.9	197	605
March	8.1	5.7	5.99	9.27	186	570
April	6.0	5.5	5.81	8.99	174	535
May	5.8	5.2	5.47	8.46	170	520
June	6.5	5.1	5.39	8.34	162	496
Fiscal year 1948-49	58	5.1	6.50	10.1	2,370	7,280

Peak discharge (base, 90 m.g.d.).--Nov. 17 (2:30 p.m.) 99 m.g.d. (153 sec.-ft.); Jan. 16 (4:30 p.m.) 330 m.g.d. (511 sec.-ft.).

Note.--No gage-height record July 30 to Sept. 8; discharge computed on basis of recorded range in stage and records for Kahaluu and Iolekaa Streams near Heeia.

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements on the island of Oahu at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on Oahu during fiscal year July 1948 to June 1949

Date	Stream	Tributary to--	Locality	Discharge	
				Second-feet	Million gallons a day
Sept.24	Makaha tunnel....	Farm land.....	At mouth, in Makaha Valley, near Waianae.	1.48	0.957
Apr. 7	....do.....	....do.....	....do.....	1.29	.834
Sept.22	Makaha mauka ditch.	....do.....	At 4-foot Parshall flume about 2,000 feet below tunnel in Makaha Valley, near Waianae.	1.26	.814
Apr. 7	....do.....	....do.....	....do.....	1.19	.769
Sept.22	Puea mauka ditch.	....do.....	At 2-foot Parshall flume below power plant, near Waianae.	2.52	1.63
Jan. 13	....do.....	....do.....	....do.....	2.99	1.93
Sept.23	Honua.....	Pacific Ocean...	At weir 2 above flume intake, near Waianae.	.071	.046
Jan. 13	....do.....	....do.....	....do.....	.232	.150
Apr. 6	....do.....	....do.....	....do.....	.093	.060
Sept.23	Kanemimi.....	Honua Stream....	At weir 3, near Waianae.....	.076	.049
Jan. 12	....do.....	....do.....	....do.....	.090	.058
Apr. 6	....do.....	....do.....	....do.....	.073	.047
Sept.23	Tunnel 1.....	Kanemimi Stream.	At weir 1-A, near Waianae.....	.019	.012
Jan. 12	....do.....	....do.....	....do.....	.028	.018
Apr. 6	....do.....	....do.....	....do.....	.029	.019
Sept.23	Coffee House Springs.	Kukaki Stream...	At weir 4, near Waianae.....	.020	.013
Jan. 12	....do.....	....do.....	....do.....	.022	.014
Apr. 6	....do.....	....do.....	....do.....	.037	.024
Sept.22	Kanewai.....	Honua Stream....	Above flume entrance, near Waianae.	2.68	1.73
Jan. 12	....do.....	....do.....	....do.....	2.81	1.82
Apr. 6	....do.....	....do.....	....do.....	2.55	1.65
Sept.22	Tunnel 19.....	Kanewai Stream..	At weir 28, near Waianae.....	1.46	.944
Jan. 12	....do.....	....do.....	....do.....	1.14	.737
Apr. 6	....do.....	....do.....	....do.....	1.25	.808
Sept.22	Tunnel 2.....	....do.....	At weir 8, near Waianae.....	.447	.289
Jan. 12	....do.....	....do.....	....do.....	.476	.308
Apr. 6	....do.....	....do.....	....do.....	.469	.303
Sept.23	Tunnel 6.....	....do.....	At weir 7, near Waianae.....	.214	.138
Jan. 12	....do.....	....do.....	....do.....	.207	.134
Apr. 6	....do.....	....do.....	....do.....	.198	.128
Jan. 12	Tunnel 6-A.....	....do.....	At weir 20, near Waianae.....	.039	.025
Apr. 6	....do.....	....do.....	....do.....	.025	.016
Sept.23	Tunnel 7.....	....do.....	At weir 21, near Waianae.....	.084	.054
Jan. 12	....do.....	....do.....	....do.....	.082	.053
Apr. 6	....do.....	....do.....	....do.....	.077	.050
Sept.23	Tunnel 8.....	....do.....	At weir 22, near Waianae.....	.153	.099
Jan. 12	....do.....	....do.....	....do.....	.158	.102
Apr. 6	....do.....	....do.....	....do.....	.162	.105
Sept.23	Tunnel 9.....	....do.....	At weir 23, near Waianae.....	.059	.038
Jan. 12	....do.....	....do.....	....do.....	.063	.041
Apr. 6	....do.....	....do.....	....do.....	.076	.049
Sept.23	Kalalula.....	Honua Stream....	At weir 15, near Waianae.....	.012	.008
Jan. 13	....do.....	....do.....	....do.....	.036	.023
Apr. 5	....do.....	....do.....	....do.....	.017	.011
Sept.23	East Fork Kalalula.	Kalalula Stream.	At weir 30, near Waianae.....	No flow	No flow
Jan. 11	....do.....	....do.....	....do.....	.048	.031
Apr. 5	....do.....	....do.....	....do.....	.012	.008
Sept.22	West Fork Kalalula.	....do.....	At weir 14 below tunnel 15, above pipe-line diversion, near Waianae.	.612	.396
Jan. 11	....do.....	....do.....	....do.....	.590	.381
Apr. 5	....do.....	....do.....	....do.....	.675	.436
Sept.23	Left Branch of West Fork Kalalula.	West Fork Kalalula Stream.	At weir 9 below tunnel 11, near Waianae.	.099	.064
Jan. 11	....do.....	....do.....	....do.....	.032	.021
Apr. 5	....do.....	....do.....	....do.....	.114	.074
Sept.23	Right Branch of West Fork Kalalula.	....do.....	At weir 25 above tunnel 14, near Waianae.	.105	.068
Jan. 11	....do.....	....do.....	....do.....	.093	.060
Apr. 5	....do.....	....do.....	....do.....	.101	.065
Sept.23	....do.....	....do.....	At weir 10, near Waianae.....	.249	.161
Jan. 11	....do.....	....do.....	....do.....	.258	.167
Apr. 5	....do.....	....do.....	....do.....	.243	.157
Sept.23	Tunnel 14.....	Right Branch of West Fork Kalalula Stream.	At weir 24, near Waianae.....	.116	.075
Jan. 11	....do.....	....do.....	....do.....	.111	.072
Apr. 5	....do.....	....do.....	....do.....	.125	.081
Sept.23	Tunnel 15.....	West Fork Kalalula Stream.	At weir 13, near Waianae.....	.354	.229
Jan. 11	....do.....	....do.....	....do.....	.362	.234
Apr. 5	....do.....	....do.....	....do.....	.320	.207

MISCELLANEOUS DISCHARGE MEASUREMENTS

Miscellaneous discharge measurements on Oahu during fiscal year July 1948 to June 1949--Continued

Date	Stream	Tributary to--	Locality	Discharge	
				Second-feet	Million gallons a day
Sept.24	Hiu	Honua Stream	At weir 26 above flume outlet, near Waianae.	0.039	0.025
Jan. 13	....do	....do	....do	.079	.051
Apr. 7	....do	....do	....do	.043	.028
Sept.24	....do	....do	At weir 17, near Waianae	.037	.024
Jan. 13	....do	....do	....do	.659	.426
Apr. 7	....do	....do	....do	.114	.074
Sept.24	Kumaipo	....do	At weir 11 below tunnel 6, near Waianae.	.059	.038
Jan. 13	....do	....do	....do	.511	.330
Apr. 7	....do	....do	....do	.098	.063
Sept.24	....do	....do	At weir 12 above diversion flume to Hiu Stream, near Waianae.	.053	.034
Jan. 13	....do	....do	....do	.645	.417
Apr. 7	....do	....do	....do	.156	.101
Sept.24	City and county of Honolulu tunnel	....do	At 9-inch Parshall flume just below mouth of tunnel, near Waianae.	.872	.564
Jan. 13	....do	....do	....do	.813	.525
Apr. 7	....do	....do	....do	.818	.529
Sept.24	Punanaula	....do	At weir 16 below tunnel 17, near Waianae.	.028	.018
Jan. 13	....do	....do	....do	.025	.016
Apr. 7	....do	....do	....do	.029	.019
Sept. 9	Kahaluu	Pacific Ocean	750 feet below regular station, Kahaluu Stream, near Heeia.	1.03	.666
9	Second Left Branch Kahaluu.	Kahaluu Stream	25 feet above confluence with Kahaluu Stream, near Heeia.	.816	.527
Feb. 25	South Fork Kaalaea.	Kaalaea Stream	15 feet above confluence with North Fork Kaalaea Stream, near Waikane.	.931	.602
25	Right Branch of South Fork Kaalaea.	South Fork Kaalaea Stream.	At altitude 450 feet above large spring flow on right bank, near Waikane.	.318	.206
25	....do	....do	Lat. 21°27'41", long. 157°52' 06", at altitude 400 feet, near Waikane.	.674	.436
25	Left Branch of South Fork Kaalaea.	....do	Lat. 21°27'42", long. 157°52' 06", at altitude 400 feet, near Waikane.	.194	.125
25	North Fork Kaalaea.	Kaalaea Stream	15 feet above confluence with South Fork Kaalaea Stream, near Waikane.	1.05	.679

Halawa Stream near Halawa

Location.--Lat. 21°09'30", long. 156°46'00", about 500 feet downstream from confluence of two main branches, 1¾ miles west of Halawa, and 6 miles northeast of Pukoo. Altitude of gage, 200 feet (from topographic map).

Drainage area.--4.5 square miles.

Records available.--August 1917 to July 1932, November 1937 to June 1949.

Average discharge.--25 years (1918-32, 1938-49), 19.4 million gallons a day (30.0 second-feet).

Extremes.--Maximum discharge during year, 1,900 million gallons a day (2,940 second-feet) Jan. 11 (gage height, 8.25 feet), from rating curve extended above 20 million gallons a day by logarithmic plotting; minimum, 2.65 million gallons a day (4.1 second-feet) May 13, 21-25.

1917-32, 1937-49: Maximum discharge, 4,010 million gallons a day (6,200 second-feet) Apr. 2, 1948 (gage height, 12.30 feet), from rating curve extended above 20 million gallons a day by logarithmic plotting; minimum, 0.8 million gallons a day (1.2 second-feet) Oct. 13-15, 19, 1917.

Remarks.--Records poor. A 2-inch (corrected) pipe line diverts water about a quarter of a mile above station for domestic use of Halawa village.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.7	6.8	4.4	33.5	12.4	15.5	14.9	93	6.3	11.5	4.9	7.4
2	22	8.4	10.5	12.8	35.5	13.6	43	47	5.7	7.1	3.1	8.7
3	46	5.5	6.8	12.3	8.8	13.1	22	17.3	9.0	6.0	4.2	9.7
4	9.5	4.6	4.2	6.6	7.9	10.1	11.1	12.1	7.7	4.9	4.0	5.3
5	12.2	4.0	3.6	9.6	6.8	7.9	8.8	8.8	5.7	13.7	8.2	7.9
6	8.2	14.9	3.6	5.7	6.3	12.9	14.9	8.2	4.4	7.4	3.8	5.6
7	9.5	8.2	10.9	6.3	50	15.4	10.0	8.3	4.2	5.7	2.95	4.0
8	10.6	4.6	5.5	5.7	53	19.1	52	292	4.6	12.2	2.8	3.3
9	41	3.8	4.4	5.1	8.5	28.5	36	31.5	4.2	5.6	2.8	3.1
10	10.2	3.6	3.6	4.6	10.5	27.5	46	16.7	4.0	4.2	2.8	2.95
11	100	11.5	4.8	16.3	17.2	14.1	145	12.5	61	31.5	2.8	3.2
12	27	13.0	6.8	6.8	13.4	17.0	46	10.8	49	25	2.8	16.1
13	14.9	5.9	5.3	6.0	8.8	19.1	24	12.1	124	9.0	9.8	4.2
14	9.9	11.7	4.2	5.5	7.4	18.8	12.2	12.4	20.5	8.6	8.2	3.1
15	46	67	3.8	5.9	7.1	15.5	54	11.0	10.8	6.0	6.5	2.95
16	10.8	57	3.6	13.4	29	12.6	37.5	9.5	7.7	10.1	8.6	2.95
17	24	21	4.0	10.0	37	15.7	155	8.5	5.7	4.9	3.2	2.8
18	14.3	62	5.5	6.5	17.2	14.3	42	7.7	5.1	5.1	2.8	2.8
19	8.2	13.3	4.4	5.3	11.5	9.2	64	6.8	4.6	6.7	2.8	2.8
20	6.0	57	4.0	32	12.0	21.5	24	5.7	4.2	5.5	2.8	4.4
21	4.9	14.2	3.6	17.5	24.5	44	15.1	5.1	4.2	4.4	2.65	4.0
22	4.4	39.5	4.6	13.1	25	39.5	11.5	4.6	5.6	17.5	2.65	3.35
23	4.2	35	50	10.4	24	29	16.0	4.6	6.8	31.5	2.65	20
24	8.4	20	14.0	7.1	34	119	13.6	4.6	4.4	31	2.65	8.1
25	5.5	11.5	5.3	12.0	14.5	23.5	47	4.6	4.2	9.0	16.0	7.4
26	6.1	7.4	7.3	15.4	20	44	22.5	4.6	6.7	10.5	32	4.2
27	17.2	5.3	90	11.1	34	31	69	7.6	4.2	11.5	47	3.1
28	22.5	10.2	115	10.2	16.6	44	18.8	17.1	9.3	7.4	70	4.2
29	34.5	7.4	35	9.5	28	36	11.8	-	24	5.7	18.8	5.3
30	10.0	5.5	23	12.5	26	44	10.5	-	18.9	6.8	8.5	25
31	9.3	7.2	-	22	-	42	8.2	-	13.7	-	7.7	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	100	4.2	18.3	28.3	568	1,740
August	67	3.6	17.6	27.2	547	1,680
September	115	3.6	15.1	23.4	452	1,390
October	33.5	4.6	11.3	17.5	351	1,080
November	53	6.3	20.2	31.3	607	1,860
December	119	7.9	26.4	40.8	817	2,510
Calendar year 1948	490	3.45	25.2	39.0	9,230	28,360
January	155	8.2	35.7	55.2	1,110	3,400
February	292	4.6	24.5	37.9	685	2,100
March	124	4.0	14.5	22.4	450	1,380
April	31.5	4.2	10.9	16.9	326	1,000
May	70	2.65	9.69	15.0	300	922
June	25	2.8	6.26	9.69	188	577
Fiscal year 1948-49	292	2.65	17.5	27.1	6,400	19,640

Peak discharge (base, 950 m.g.d.).--Jan. 11 (10:30 p.m.) 1,900 m.g.d. (2,940 sec.-ft.); Feb. 1 (11 p.m.) 1,000 m.g.d. (1,550 sec.-ft.).

Note.--Faulty or no gage-height record on many days in most months; discharge computed from partly or wholly estimated gage heights.

Waiakeakua Stream near Wailau

Location.--Lat. 21°07'30", long. 156°49'40", three-quarters of a mile upstream from confluence with Pulena Stream, 3.2 miles south of Wailau, and 3.8 miles northwest of Pukoo. Datum of gage is 698 feet above mean sea level (hand levels by Bureau of Reclamation).

Drainage area.--1.4 square miles.

Records available.--October 1919 to September 1929, September 1937 to June 1949.

Average discharge.--20 years (1920-29, 1938-49), 7.59 million gallons a day (11.7 second-feet)

Extremes.--Maximum discharge during year, 281 million gallons a day (435 second-feet) Jan. 11 (gage height, 5.00 feet), from rating curve extended above 170 million gallons a day by logarithmic plotting; minimum, 1.6 million gallons a day (2.5 second-feet) June 16-20.

1919-29, 1937-49: Maximum discharge, 1,360 million gallons a day (2,100 second-feet) Jan. 26, Apr. 2, 1948, from rating curve extended above 170 million gallons a day by logarithmic plotting; maximum gage height, 9.90 feet Jan. 26, 1948; minimum discharge, 1.3 million gallons a day (2.0 second-feet) Mar. 7, 1920.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. No diversions.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.1	7.3	6.8	9.9	7.2	5.4	6.2	6.3	3.3	5.9	4.2	a3.2
2	8.6	7.1	7.3	7.0	10.1	6.0	13.3	4.8	3.5	4.8	3.7	3.5
3	11.2	7.0	6.6	7.0	5.9	5.2	7.0	4.6	4.2	4.2	3.5	3.2
4	7.1	6.6	6.3	6.0	5.3	5.0	4.8	4.4	3.5	3.7	3.7	2.6
5	7.4	6.5	6.2	6.2	4.9	5.1	3.9	4.4	3.2	6.9	3.5	2.8
6	6.8	8.9	6.2	5.4	4.5	5.7	7.5	4.2	3.2	4.2	3.3	2.6
7	7.1	6.8	6.6	5.4	8.9	5.5	3.9	4.2	3.0	3.5	3.2	2.3
8	8.6	6.3	5.9	5.3	7.3	8.5	8.5	48	3.5	6.1	3.0	2.1
9	8.8	6.3	5.7	5.0	5.7	7.5	6.8	7.9	3.0	3.5	3.0	2.5
10	7.3	6.0	5.6	4.7	5.3	7.3	11.8	6.2	3.2	3.5	2.8	2.1
11	11.2	7.7	5.7	8.1	5.7	6.5	11.9	5.5	7.0	18.5	3.0	2.1
12	8.0	6.5	5.7	5.6	6.0	6.9	9.4	5.3	8.2	9.8	2.6	3.2
13	7.3	6.9	5.3	5.2	5.4	10.2	7.0	5.5	14.1	6.0	4.3	1.8
14	7.3	6.6	5.0	4.7	5.0	10.0	6.2	5.5	5.2	5.5	3.0	1.8
15	13.4	18.9	5.2	4.7	5.2	8.8	8.3	5.0	4.4	4.6	2.6	1.7
16	8.6	12.1	5.0	4.6	6.0	7.6	10.5	5.3	4.2	4.4	2.6	1.6
17	10.2	10.2	5.4	5.3	5.7	7.8	26.5	4.6	3.5	3.9	2.5	1.6
18	9.5	12.9	5.6	4.6	5.2	7.0	11.9	4.4	3.5	4.2	2.3	2.0
19	8.2	8.8	5.3	4.5	4.9	6.0	15.9	4.2	3.3	3.9	a2.2	1.7
20	7.8	17.7	5.0	9.9	5.2	8.8	10.0	3.9	3.2	3.5	a2.1	2.7
21	7.4	9.4	5.0	6.5	6.8	14.0	8.4	3.9	3.0	4.3	a2.0	2.6
22	7.1	11.5	5.7	7.7	6.4	14.4	7.3	3.7	4.2	8.4	a2.0	3.2
23	7.0	11.2	11.5	5.8	6.0	13.5	7.6	3.7	3.2	14.5	a2.0	5.4
24	7.7	9.0	6.0	5.2	8.4	27	6.6	3.5	3.2	14.2	a2.0	2.5
25	7.1	8.2	5.6	6.6	5.7	8.7	7.9	3.5	3.2	6.5	a5	2.1
26	7.6	7.8	6.0	a8	6.6	13.4	6.5	3.3	3.2	8.8	a7	1.8
27	11.0	7.8	15.8	a7	8.5	9.2	10.1	5.6	3.2	6.2	a10	1.8
28	9.0	8.3	18.3	a7	6.5	12.7	6.5	5.2	7.0	5.3	a14	2.6
29	12.0	7.4	9.5	7.5	8.3	11.8	5.5	-	7.7	4.6	a6	2.6
30	8.2	7.3	9.4	6.8	5.9	12.4	5.3	-	8.7	4.8	a3.5	7.6
31	7.6	7.3	-	8.9	-	10.0	5.0	-	7.8	-	a3.1	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	13.4	6.8	8.49	13.1	263	808
August	18.9	6.0	8.78	13.6	272	836
September	18.3	5.0	6.97	10.8	209	642
October	9.9	4.5	6.33	9.79	196	602
November	10.1	4.5	6.28	9.72	188	578
December	27	5.0	9.29	14.4	288	884
Calendar year 1948	273	3.4	9.71	15.0	3,550	10,900
January	26.5	3.9	8.65	13.4	268	822
February	48	3.3	6.31	9.76	177	542
March	14.1	3.0	4.66	7.21	145	444
April	18.5	3.5	6.27	9.70	188	578
May	14	2.0	3.80	5.88	118	361
June	7.6	1.6	2.64	4.08	79.3	243
Fiscal year 1948-49	48	1.6	6.55	10.1	2,390	7,340

Peak discharge (base, 240 m.g.d.).--Jan. 11 (10:30 p.m.) 281 m.g.d. (435 sec.-ft.).
a No gage-height record; discharge computed on basis of recorded range in stage and records for Halawa and Waikolu Streams.

Pelekunu Stream near Pelekunu

Location.--Lat. 21°08'20", long. 156°52'50", three-quarters of a mile upstream from confluence with Lanipuni Stream, 1.8 miles south of Pelekunu, and 6.8 miles northwest of Pukoo. Datum of gage is 546 feet above mean sea level (levels by Bureau of Reclamation).

Drainage area.--2.4 square miles.

Records available.--December 1919 to January 1929, September 1937 to June 1949.

Average discharge.--18 years (1920-28, 1938-47, 1948-49), 10.5 million gallons a day (16.2 second-feet).

Extremes.--Maximum discharge during year, 1,280 million gallons a day (1,980 second-feet) Jan. 17 (gage height, 7.19 feet), from rating curve extended above 20 million gallons a day by test on model of station site; minimum, 2.4 million gallons a day (3.7 second-feet) June 26.

1919-29, 1937-49: Maximum discharge, 3,080 million gallons a day (4,770 second-feet) Nov. 20, 1940 (gage height, 6.81 feet), from rating curve extended above 80 million gallons a day by logarithmic plotting, but may have been greater Jan. 26, 1948 when discharge was not determined; minimum, 1.46 million gallons a day (2.26 second-feet) Nov. 26, 27, 1943.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversions.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.4						20.5	6.6	4.6	11.4	6.0	4.0
2	10.1						20.5	6.3	5.2	8.0	5.4	5.8
3	12.2	5		8			16.6	5.7	4.9	6.6	5.4	6.0
4	8.1				7		10.3	6.3	4.3	5.7	5.6	4.0
5	8.2					10	8.8	5.4	4.0	9.9	5.2	3.6
6	6.6						10.0	5.2	4.0	6.0	4.6	3.2
7	6.5						8.0	6.0	3.8	5.4	5.4	3.0
8	6.6						30.5	181	6.3	7.5	4.0	3.0
9	5.4				30	37	24.5	26	4.0	5.2	4.0	3.0
10	3.6	4				52	46	14.4	3.8	4.9	3.8	2.8
11	15.4		3.5			23.5	47	11.6	4.9	25.5	3.8	4.0
12	12.4					33	57	10.3	19.8	11.0	3.6	3.4
13	8.4			5		69	27	13.8	68	7.3	6.4	3.0
14	7.7					40	21.5	10.8	11.8	6.6	4.0	2.8
15						25	62	9.6	8.0	6.0	3.6	2.6
16						28	145	10.6	6.3	5.7	3.6	2.6
17	9	5.5				23.5	317	7.7	5.4	4.9	3.4	2.6
18						17.5	62	6.9	5.2	5.2	3.4	2.8
19						11.2	54	6.3	4.9	4.9	3.2	2.6
20						22.5	29	6.0	4.3	4.3	3.2	2.6
21					10	74	20	5.7	4.0	4.6	3.2	2.8
22		7				130	15.3	5.4	9.1	9.6	3.2	3.15
23	5					97	13.5	5.2	6.2	13.5	3.0	3.95
24						179	11.2	4.9	6.0	26	3.4	3.0
25				13		55	10.3	4.9	5.7	9.6	4.9	2.6
26			14			59	8.8	4.9	6.5	24	3.4	2.4
27						40	19.4	5.7	5.2	17.4	3.4	2.6
28						72	11.6	6.8	9.5	9.9	8.9	3.2
29	7	4				59	8.4	-	10.0	8.0	6.1	3.4
30						58	7.3	-	19.3	7.7	3.4	5.9
31			-			47	6.9	-	13.8	-	3.4	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	15.4	-	7.60	11.8	236	723
August	-	-	4.98	7.71	154	474
September	-	-	6.30	9.75	189	580
October	-	-	8.32	12.9	258	792
November	-	-	12.1	18.7	362	1,110
December	179	-	43.0	66.5	1,330	4,090
Calendar year	-	-	-	-	-	-
January	317	6.9	37.1	57.4	1,150	3,530
February	181	4.9	14.3	22.1	400	1,230
March	68	3.8	8.99	13.9	279	856
April	26	4.3	9.41	14.6	282	866
May	8.9	3.0	4.32	6.68	134	411
June	6.0	2.4	3.35	5.18	100	308
Fiscal year 1948-49	317	2.4	13.4	20.7	4,870	14,970

Peak discharge (base, 300 m.g.d.).--Dec. 23 (11 p.m.) 311 m.g.d. (481 sec.-ft.); Jan. 11, (11 p.m.) 540 m.g.d. (836 sec.-ft.); Jan. 17 (4 a.m.) 1,280 m.g.d. (1,980 sec.-ft.); Feb. 8 (11:30 a.m.) 1,000 m.g.d. (1,550 sec.-ft.).

Note.--No gage-height record July 15 to Dec. 8; discharge computed on basis of records for Lanipuni, Waikolu, and Waiakeakua Streams.

Lanipuni Stream near Pelekunu

Location.--Lat. 21°08'40", long. 156°52'30", 0.4 mile upstream form confluence with Pelekunu Stream, 1½ miles southeast of Pelekunu, and 6.8 miles northwest of Pukoo. Datum of gage is 418 feet above mean sea level (hand levels from Geological Survey bench mark).

Drainage area.--0.8 square mile.

Records available.--December 1919 to September 1929, September 1937 to June 1949.

Average discharge.--19 years (1920-29, 1938-47, 1948-49), 9.61 million gallons a day (14.9 second-feet).

Extremes.--Maximum discharge recorded during year, 1,100 million gallons a day (1,700 second-feet) Feb. 8 (gage height, 5.50 feet), from rating curve extended above 35 million gallons a day by logarithmic plotting; minimum, 2.6 million gallons a day (4.0 second-feet) June 20.

1919-29, 1937-49: Maximum discharge determined, 3,470 million gallons a day (5,370 second-feet) Mar. 18, 1943 (gage height, 9.02 feet), from rating curve extended above 35 million gallons a day by logarithmic plotting; minimum, 1.45 million gallons a day (2.24 second-feet) Jan. 29, 1944.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversions.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	5.3	3.7	12.1				4.7	3.5	7.6	4.4	4.1
2	11.3	6.8	4.4	6.6				4.5	4.1	5.5	4.1	6.9
3	12.2	4.8	3.8	6.0				4.4	4.0	4.8	4.0	6.7
4	8.7	4.4	3.4	4.8	5			4.4	3.4	4.5	4.2	4.7
5	7.8	4.2	3.4	5.7		6.5	6	4.2	3.3	11.1	4.0	5.0
6	6.2	5.2	3.4					4.1	3.2	5.1	4.0	4.0
7	6.4	4.1	4.7					4.6	3.2	4.5	3.8	3.5
8	7.3	4.0	3.4		30			108	4.9	6.9	3.4	3.4
9	5.3	3.8	3.4					8.9	3.3	4.4	3.3	3.3
10	5.6	3.7	3.2			25		5.8	3.3	4.2	3.3	3.2
11	30.5	4.6	3.8				35	5.3	5.5	30.5	3.4	3.7
12	10.0	4.1	4.1					5.1	14.4	11.1	3.2	3.8
13	6.2	3.8	3.8	4.5		30		6.5	50	6.0	6.0	3.1
14	6.4	3.7	3.2				10	6.0	8.0	5.3	3.4	3.0
15	10.6	9.2	3.2					5.1	5.3	4.8	3.2	2.8
16	5.6	6.4	3.2					5.5	4.7	4.3	3.2	2.8
17	11.7	4.5	3.1			10		4.5	4.1	4.0	3.1	2.8
18	11.1	4.7	3.4				100	4.2	3.8	4.1	3.0	3.0
19	6.3	4.1	3.9					4.1	3.7	3.8	3.1	2.8
20	5.3	13.6	3.2		7			4.0	3.4	3.5	3.0	3.0
21	4.8	5.1	3.1					3.8	3.2	4.0	2.8	3.1
22	4.5	8.0	3.2				7.5	3.7	5.9	10.6	2.7	4.6
23	4.4	7.0	7.8	7.5		75		3.7	4.9	18.8	2.7	4.4
24	5.4	5.1	4.5					3.5	4.3	22.5	2.8	3.3
25	4.2	4.5	3.4					3.5	5.9	7.6	3.3	2.8
26	4.4	4.2	3.4				5.0	3.4	5.8	23	3.0	2.7
27	7.0	4.1	29				10.7	5.9	5.2	12.8	3.2	2.7
28	7.5	4.7	50				5.9	4.7	10.0	6.7	12.0	3.2
29	9.0	4.1	9.4	15		35	5.1	-	10.9	5.1	5.4	3.6
30	5.5	4.1	7.2				4.8	-	16.1	5.2	3.5	5.1
31	5.1	4.0	-		-		4.8	-	10.4	-	3.9	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	30.5	4.2	7.76	12.0	241	739
August	13.6	3.7	5.16	7.98	160	491
September	50	3.1	6.42	9.93	193	591
October	-	-	7.28	11.3	226	693
November	-	-	8.13	12.6	244	749
December	-	-	28.4	43.9	880	2,700
Calendar year	-	-	-	-	-	-
January	-	-	23.5	36.4	728	2,240
February	108	3.4	8.43	13.0	236	725
March	50	3.2	7.15	11.1	222	680
April	30.5	3.5	8.41	13.0	252	774
May	12.0	2.7	3.82	5.91	118	363
June	6.9	2.7	3.70	5.72	111	341
Fiscal year 1948-49	-	-	9.89	15.3	3,610	11,090

Peak discharge (base, 300 m.g.d.).--Sept. 28 (5 a.m.) 810 m.g.d. (1,250 sec.-ft.); Dec. 23, time and discharge unknown; Jan. 11, time and discharge unknown; Jan. 17, time and discharge unknown; Feb. 8 (12 a.m.) 1,100 m.g.d. (1,700 sec.-ft.).

Note.-- No gage-height record Oct. 6 to Jan. 25; discharge computed on basis of recorded range in stage and on records for Waikolu and Waiakeakua Streams.

Waikolu Stream below pipe-line crossing, near Kalaupapa

Location.--Trenton-type control, lat. 21°09'50", long. 156°56'00", three-quarters of a mile upstream from mouth and 3.9 miles southeast of Kalaupapa post office. Datum of gage is 253 feet above mean sea level (hand levels by Bureau of Reclamation).
Drainage area.--4.0 square miles.
Records available.--August 1931 to July 1932, September 1937 to June 1949. June 1919 to November 1930 at site 500 feet upstream.
Extremes.--Maximum discharge during period, 890 million gallons a day (1,380 second-feet) Jan. 16 (gage height, 5.84 feet), from rating curve extended above 25 million gallons a day by test on model of station site; minimum, 4.87 million gallons a day (7.54 second-feet) June 6.
1919-32, 1937-49: Maximum discharge, 3,700 million gallons a day (5,720 second-feet) Jan. 26, 1948 (gage height, about 10.25 feet), from rating curve extended above 50 million gallons a day by logarithmic plotting; minimum, 1.3 million gallons a day (2.0 second-feet) Nov. 1, 2, 1925, June 5, 1926.
Revisions.--The figures of maximum discharge for some fiscal years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

Water-Supply Paper	Fiscal year	Date	Gage height (feet)	Discharge		Water-Supply Paper	Fiscal year	Date	Gage height (feet)	Discharge	
				Million gallons a day	Second-feet					Million gallons a day	Second-feet
740..	1932	Feb. 28	5.54	1,020	1,580	985..	1943	Mar. 18	5.21	855	1,320
865..	1938	Apr. 9	6.01	1,260	1,950	1015..	1944	Feb. 21	4.35	550	851
885..	1939	Aug. 18	5.31	920	1,420	1045..	1945	Nov. 8	6.12	1,310	2,030
905..	1940	Oct. 23	4.66	655	1,010	1065..	1946	Jan. 22	5.96	1,260	851
935..	1941	Nov. 20	5.30	905	1,400	1095..	1947	Dec. 20	4.36	550	5,720
965..	1942	Mar. 9	5.98	1,260	1,950	1125..	1948	Jan. 26	†10.25	3,700	5,720

† About.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Kalaupapa water-supply system diverts water above station.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	-	7.3	6.2	12.5	8.7	13.6	8.4	7.0	5.8	8.2	6.5	6.2
2	-	14.3	6.2	8.2	13.9	7.6	7.6	6.8	5.8	6.0	6.2	9.0
3	-	9.0	6.2	7.0	7.3	7.9	7.9	6.8	5.8	5.8	6.0	10.2
4	-	7.3	6.2	7.0	6.8	9.5	7.0	6.8	5.6	5.6	6.0	6.8
5	-	6.8	6.2	9.8	6.5	7.0	6.8	6.8	5.6	11.6	6.5	5.8
6	-	6.8	6.2	7.3	6.2	9.9	6.8	6.8	5.6	6.5	6.5	5.6
7	-	7.0	6.2	7.0	19.1	7.0	7.0	6.8	5.6	5.8	6.5	5.2
8	-	6.8	6.2	6.8	28	16.1	18.6	97	6.5	7.0	6.0	5.2
9	-	6.8	6.2	6.8	8.2	29	20	10.5	6.0	6.0	5.8	5.2
10	-	6.8	6.2	6.8	7.6	22	21	7.6	5.6	5.6	5.8	5.1
11	-	6.5	6.0	7.9	7.9	10.6	45	7.0	6.0	27.5	5.8	5.2
12	-	6.8	6.0	7.6	11.7	15.0	23	6.8	19.3	10.6	5.8	5.4
13	-	6.8	6.2	7.6	8.4	25.5	8.2	7.9	71	6.8	5.8	5.4
14	-	6.5	6.0	6.8	7.0	12.2	7.0	7.3	9.2	5.8	6.0	5.2
15	-	8.7	6.0	6.5	7.0	10.3	12.6	7.6	6.8	5.8	5.8	5.2
16	-	9.2	6.0	6.5	10.2	12.9	43	8.7	6.0	5.6	5.6	5.2
17	-	7.3	6.0	6.2	12.5	9.8	149	6.8	5.8	5.6	5.6	5.2
18	-	6.8	6.0	6.2	8.8	11.8	19.7	6.2	5.6	5.6	5.6	5.2
19	-	6.6	6.0	6.2	6.5	8.4	17.2	6.0	5.6	5.6	5.6	5.2
20	-	10.2	6.0	10.8	6.2	11.0	9.7	5.8	5.6	5.6	5.6	5.2
21	-	7.6	5.8	11.2	6.0	24.5	8.2	5.8	5.6	5.6	5.4	5.2
22	-	8.5	5.8	11.0	6.5	29.5	7.3	5.8	5.8	14.6	5.4	5.2
23	-	8.4	6.0	10.6	11.4	18.0	7.0	5.8	7.6	22	5.4	5.4
24	-	8.2	6.2	7.3	9.9	47	7.0	5.8	6.8	31.5	5.4	5.6
25	-	7.0	6.0	7.6	7.3	15.6	7.0	5.8	6.2	8.4	5.6	5.8
26	-	6.8	5.8	11.4	7.3	17.8	7.0	5.6	8.9	56	5.8	5.4
27	-	6.5	22	12.2	19.0	11.8	14.2	6.4	5.8	21.5	5.6	5.2
28	-	6.5	33	14.0	8.2	17.7	12.5	6.8	7.2	8.4	10.7	a5.2
29	-	6.5	9.8	15.0	12.7	14.3	7.6	-	8.8	7.0	10.4	a5.4
30	7.9	6.2	12.6	13.2	8.2	25.5	7.6	-	11.6	6.8	6.2	a6.0
31	7.6	6.2	-	13.1	-	24.5	7.0	-	9.6	-	5.6	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	-	-	-	-	-	-
August	14.3	6.2	7.51	11.6	233	714
September	33	5.8	7.84	12.1	235	722
October	15.0	6.2	8.97	13.9	278	853
November	28	6.0	9.83	15.2	295	905
December	47	7.0	16.2	25.1	503	1,540
January	149	6.8	17.4	26.9	538	1,650
February	97	5.6	10.0	15.5	281	862
March	71	5.6	9.12	14.1	283	868
April	56	5.6	11.1	17.2	334	1,030
May	10.7	5.4	6.15	9.52	190	585
June	10.2	5.1	5.70	8.82	171	525
The period	-	-	-	-	-	10,300

Peak discharge (base, 450 m.g.d.).--Jan. 16 (12 p.m.) 890 m.g.d. (1,380 sec.-ft.); Feb. 8 (12:30 p.m.) 755 m.g.d. (1,170 sec.-ft.).
a No gage-height record; discharge computed on basis of records for Pelekunu, Lanipuni, and Waiakeakua Streams.
Note.--Station severly damaged by flood of Jan. 26, 1948; rebuilt July 30, 1948.

Waialala Springs near Kalae

Location.--Right-angle brass weir control, lat. 21°10'20", long. 157°00'05", on highway from Kalae to Kalaupapa Pali, 0.8 mile northeast of Kalae and 5.7 miles northeast of Kaunakakai post office. Altitude of gage, 1,600 feet (from topographic map).

Records available.--September 1940 to June 1949.

Extremes.--Maximum daily discharge during year, 0.019 million gallons a day (0.029 second-foot) Aug. 24; minimum daily, 0.002 million gallons a day (0.003 second-foot) Mar. 3-12, 14-17.

1940-49: Maximum daily discharge, 0.275 million gallons a day (0.425 second-foot) Mar. 11, 1942; minimum daily, 0.002 million gallons a day (0.003 second-foot) Jan. 2, 11-13, 1947, Mar. 3-12, 14-17, 1949.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Maui County Water Works diverts entire flow for domestic supply from tail bay at station.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.016	0.017	0.009	0.009	0.009	0.013	0.017	0.004	0.003	0.013	0.012	0.009
2	.016	.017	.009	.009	.009	.013	.017	.004	.003	.013	.012	.008
3	.016	.016	.009	.009	.009	.013	.017	.004	.002	.013	.012	.008
4	.016	.016	.009	.009	.012	.012	.017	.004	.002	.013	.012	.008
5	.016	.016	.009	.009	.014	.012	.017	.004	.002	.013	.012	.008
6	.017	.016	.009	.009	.014	.012	.017	.004	.002	.013	.013	.008
7	.017	.016	.009	.009	.015	.012	.017	.004	.002	.013	.013	.008
8	.017	.016	.009	.009	.015	.012	.017	.009	.002	.013	.013	.007
9	.017	.016	.009	.009	.014	.012	.017	.006	.002	.013	.013	.007
10	.017	.016	.009	.009	.014	.012	.017	.005	.002	.013	.014	.007
11	.017	.016	.009	.009	.014	.012	.017	.005	.002	.013	.014	.007
12	.017	.016	.009	.009	.014	.014	.017	.005	.002	.013	.014	.007
13	.017	.016	.009	.009	.014	.014	.017	.005	.003	.013	.014	.007
14	.017	.016	.009	.009	.014	.014	.017	.005	.002	.013	.015	.007
15	.017	.016	.009	.009	.014	.014	.017	.005	.002	.013	.014	.007
16	.017	.016	.009	.009	.014	.014	.017	.005	.002	.013	.014	.007
17	.017	.016	.009	.009	.014	.014	.016	.005	.002	.013	.014	.007
18	.017	.016	.009	.009	.014	.014	.015	.005	.009	.013	.014	.007
19	.017	.016	.009	.009	.014	.017	.012	.005	.014	.013	.014	.007
20	.016	.016	.009	.009	.014	.017	.009	.003	.014	.013	.014	.007
21	.016	.016	.009	.009	.014	.017	.006	.003	.014	.012	.014	.007
22	.016	.016	.009	.009	.014	.017	.005	.003	.014	.012	.012	.006
23	.016	.016	.009	.009	.014	.017	.005	.003	.014	.012	.012	.006
24	.016	.019	.009	.009	.014	.017	.005	.003	.014	.012	.011	.006
25	.016	.013	.009	.009	.014	.017	.005	.003	.013	.012	.011	.006
26	.017	.009	.009	.009	.014	.017	.005	.003	.013	.012	.011	.006
27	.017	.009	.009	.009	.014	.017	.005	.003	.013	.012	.010	.006
28	.017	.009	.009	.009	.014	.017	.004	.003	.013	.012	.010	.006
29	.017	.009	.009	.009	.013	.017	.004	-	.013	.012	.010	.006
30	.017	.009	.009	.009	.013	.017	.004	-	.013	.012	.009	.006
31	.017	.009	-	.009	-	.017	.004	-	.013	-	.008	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0.017	0.016	0.017	0.026	0.516	1.6
August	.019	.009	.015	.023	.456	1.4
September	.009	.009	.009	.014	.270	.8
October	.009	.009	.009	.014	.279	.9
November	.015	.009	.013	.020	.403	1.2
December	.017	.012	.015	.023	.454	1.4
Calendar year 1948	.034	.009	.018	.028	6.43	20
January	.017	.004	.012	.019	.376	1.2
February	.009	.003	.004	.006	.120	.4
March	.014	.002	.007	.011	.221	.7
April	.013	.012	.013	.020	.380	1.2
May	.015	.008	.012	.019	.385	1.2
June	.008	.006	.007	.011	.208	.6
Fiscal year 1948-49	.019	.002	.011	.017	4.07	13

Note.--No gage-height record July 11-18, Dec. 8 to Jan. 21; discharge computed on basis of recorded range in stage and records for Kapuna Stream near Kalae.

Kapuna Stream near Kalae

Location.--Soil Conservation Service type H (De Fabritis) flume, lat. 21°09'05", long. 156°59'00", 2.1 miles southeast of Kalae and 4.9 miles northeast of Kaunakakai post office. Altitude of gage, 1,900 feet (from topographic map).

Records available.--June 1940 to June 1949.

Extremes.--Maximum discharge during year, 0.65 million gallons a day (1.01 second-feet) Jan. 16 (gage height, 0.72 foot); minimum, 0.01 million gallons a day (0.02 second-foot) on many days in most months.
1940-49: Maximum discharge, 10.0 million gallons a day (15.5 second-feet) Mar. 11, 1942 (gage height, 2.00 feet); no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. No diversions.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Feb. 2 to Mar. 11, June 23-30)

0.1	0.01
.2	.05
.3	.10
.4	.18
.5	.29

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.02	0.02	0.01	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.04	0.01
2	.02	.03	.01	.01	.01	.01	.03	.02	.01	.01	.04	.01
3	.02	.02	.01	.01	.01	.01	.03	.01	.01	.01	.04	.01
4	.02	.02	.01	.01	.02	.01	.03	.01	.01	.02	.03	.01
5	.02	.02	.01	.01	.02	.01	.03	.01	.01	.02	.03	.01
6	.02	.02	.01	.01	.02	.01	.03	.01	.01	.02	.02	.01
7	.02	.02	.01	.01	.02	.01	.03	.01	.01	.02	.02	.01
8	.02	.02	.01	.01	.02	.01	.03	.03	.01	.02	.02	.01
9	.03	.02	.01	.01	.02	.01	.03	.04	.01	.02	.02	.01
10	.03	.01	.01	.01	.02	.01	.03	.03	.01	.02	.02	.01
11	.03	.01	.01	.01	.02	.01	.03	.03	.01	.02	.02	.01
12	.03	.01	.01	.01	.02	.02	.03	.03	.01	.02	.02	.01
13	.03	.01	.01	.01	.02	.02	.03	.03	.01	.02	.02	.01
14	.03	.01	.01	.01	.02	.02	.03	.03	.01	.02	.01	.01
15	.03	.01	.01	.01	.02	.02	.04	.03	.01	.02	.01	.01
16	.03	.01	.01	.01	.02	.02	.23	.03	.01	.02	.01	.01
17	.03	.01	.01	.01	.02	.02	a.17	.03	.01	.02	.01	.01
18	.03	.01	.01	.01	.02	.02	a.15	.03	.02	.02	.01	.01
19	.03	.01	.01	.01	.01	.03	a.12	.02	.02	.02	.01	.01
20	.03	.01	.01	.01	.01	.03	a.10	.02	.02	.02	.01	.01
21	.03	.01	.01	.01	.01	.03	a.07	.02	.02	.02	.01	.01
22	.03	.01	.01	.01	.01	.03	a.06	.02	.02	.02	.01	.01
23	.03	.01	.01	.01	.01	.03	a.05	.02	.02	.02	.01	.01
24	.03	.01	.01	.01	.01	.03	a.05	.02	.01	.02	.01	.01
25	.03	.01	.01	.01	.01	.03	a.04	.02	.01	.02	.01	.01
26	.03	.01	.01	.01	.01	.03	a.03	.01	.01	.02	.01	.01
27	.03	.01	.01	.01	.01	.03	a.03	.01	.01	.03	.01	.01
28	.02	.01	.01	.01	.01	.03	.02	.01	.01	.03	.01	.01
29	.02	.01	.01	.01	.01	.03	.02	-	.01	.03	.01	.01
30	.02	.01	.01	.01	.01	.03	.02	-	.01	.04	.01	.01
31	.02	.01	-	.01	-	.03	.02	-	.01	-	.01	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0.03	0.02	0.026	0.040	0.81	2.5
August	.03	.01	.013	.020	.41	1.3
September	.01	.01	.010	.016	.30	.9
October	.01	.01	.010	.016	.31	1.0
November	.02	.01	.015	.023	.45	1.4
December	.03	.01	.021	.032	.64	2.0
Calendar year 1948	1.50	.01	.035	.054	12.7	39
January	.23	.02	.053	.082	1.64	5.0
February	.04	.01	.021	.032	.60	1.8
March	.02	.01	.012	.019	.37	1.1
April	.04	.01	.021	.032	.62	1.9
May	.04	.01	.017	.026	.52	1.6
June	.01	.01	.010	.016	.30	.9
Fiscal year 1948-49	.23	.01	.019	.029	6.97	21

a No gage-height record; discharge computed on basis of recorded range in stage and records for Kapuna and Waikolu Streams.

Right Branch of East Fork Kawela Stream near Kamalo

Location.--Concrete V-notched weir, lat. 21°06'50" (revised), long. 156°54'30", at Molokai Ranch pipe-line intake, 4.7 miles northwest of Kamalo, and 7.6 miles northeast of Kaunakakai. Datum of gage is 3,624.86 feet above mean sea level (Territorial Survey bench mark).

Drainage area.--0.2 square mile.

Records available.--September 1946 to June 1949.

Extremes.--Maximum discharge during year, 142 million gallons a day (220 second-feet) Feb. 8 (gage height, 4.48 feet); no flow many times.
1946-49: Maximum discharge, 882 million gallons a day (1,360 second-feet) Jan. 26, 1948 (gage height, 7.97 feet); no flow many days.

Remarks.--Records good above 10 million gallons a day and poor below. Molokai Ranch diverts low flow from stream above station. Records based on model studies.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

2.3	0	2.8	1.55
2.4	.04	2.9	2.3
2.5	.17	3.1	5.7
2.6	.47	3.3	14.0
2.7	.93	3.5	27.5

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.26	0.02	0	1.91	1.81	3.4	1.12	0	0	2.4	0.06	1.13
2	3.7	4.9	0	.31	4.2	1.56	.88	0	.06	.57	0	3.3
3	6.5	.85	0	.34	.34	1.46	1.57	0	.32	.23	0	3.4
4	2.8	.02	0	.07	.02	2.3	.41	.95	.02	.16	.10	1.00
5	3.4	0	0	2.6	0	.70	.14	.67	0	2.85	.52	.23
6	1.6	.57	0	.25	0	4.3	.76	.06	0	.52	.04	.01
7	1.5	.25	.03	0	2.4	1.22	.77	.02	0	.40	1.11	0
8	1.4	0	0	.02	5.3	5.6	4.4	27.5	.80	2.15	.03	0
9	.21	0	0	0	.30	7.9	4.6	1.50	.22	.24	0	0
10	.32	0	0	0	.08	7.8	2.8	.61	0	.02	0	0
11	6.6	.33	0	2.2	.42	2.3	2.9	.20	.15	6.3	0	.76
12	3.2	0	.15	.86	3.0	10.0	1.90	0	4.8	1.77	0	1.42
13	.24	0	.09	.84	1.20	9.1	.29	1.80	10.0	2.1	.82	.06
14	0	0	0	0	.20	3.85	.14	1.46	.68	0	.35	0
15	1.9	.13	0	0	.89	3.1	3.35	1.44	.07	0	0	0
16	.54	0	0	0	4.7	4.8	10.5	2.7	0	.08	0	0
17	9.3	0	0	0	2.2	3.15	23	.38	0	0	0	0
18	4.7	0	0	0	.86	3.4	4.4	.01	0	.10	0	0
19	.63	0	0	0	.05	1.80	5.5	0	0	.23	0	0
20	.04	0	0	3.3	0	4.1	1.07	0	0	.10	0	0
21	0	0	0	2.45	0	9.8	.44	0	0	.08	0	0
22	0	1.7	0	3.15	1.13	11.4	.16	0	1.91	3.5	0	0
23	0	1.2	.43	1.51	4.3	7.2	.04	0	1.99	4.5	0	.65
24	0	.88	.26	.88	3.5	18.7	0	0	1.69	6.3	.12	.65
25	0	.13	0	2.5	.85	5.3	0	0	1.27	.42	1.04	.32
26	0	0	0	3.2	2.1	6.9	0	0	2.2	6.6	.18	0
27	.88	0	6.0	2.3	5.8	4.3	3.8	0	.14	3.95	0	0
28	.72	0	5.7	3.75	1.78	9.4	1.92	.98	1.93	.46	2.9	.61
29	2.95	0	1.05	5.0	3.9	6.1	.09	-	1.99	.05	2.9	1.11
30	1.06	.09	.83	3.05	1.08	9.9	0	-	4.9	.72	.16	3.5
31	.41	.09	-	4.1	-	6.5	0	-	3.0	-	0	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	9.3	0	1.77	2.74	54.9	168
August	4.9	0	.360	.557	11.2	34
September	6.0	0	.485	.750	14.5	45
October	5.0	0	1.44	2.23	44.6	137
November	5.8	0	1.75	2.71	52.4	161
December	18.7	.70	5.72	8.85	177	544
Calendar year 1948	130	0	2.60	4.02	950	2,920
January	23	0	2.48	3.84	77.0	236
February	27.5	0	1.44	2.23	40.3	124
March	10.0	0	1.23	1.90	38.1	117
April	6.6	0	1.56	2.41	46.8	144
May	2.9	0	.333	.515	10.3	32
June	3.5	0	.605	.936	18.2	56
Fiscal year 1948-49	27.5	0	1.60	2.48	585	1,800

Peak discharge (base, 100 m.g.d.).--Sept. 27 (11 p.m.) 101 m.g.d. (156 sec.-ft.); Jan 17 (4:30 a.m.) 121 m.g.d. (187 sec.-ft.); Feb. 8 (11:30 a.m.) 142 m.g.d. (220 sec.-ft.).
Note.--Faulty or no gage-height record July 1-18, Aug. 11-24; discharge computed on basis of partly estimated gage-height record and record for Punaula Stream.

Punaula Stream near Pukoo

Location.--Lat. 21°05'40", long. 156°48'40", 1½ miles north of Pukoo and 5½ miles northeast of Kamalo. Altitude of gage, 1,200 feet (from topographic map).

Drainage area.--0.4 square mile.

Records available.--March 1947 to June 1949.

Extremes.--1947: Maximum discharge during period March to June, 31 million gallons a day (48 second-feet) May 2 (gage height, 2.10 feet), from rating curve extended above 2 million gallons a day by test on model of station site; minimum, 0.01 million gallons a day (0.02 second-foot) Mar. 13.

1947-48: Maximum discharge during fiscal year, 330 million gallons a day (511 second-feet) Apr. 2 (gage height, 6.35 feet), from rating curve extended above 2 million gallons a day by test on model of station site; minimum, 0.03 million gallons a day (0.05 second-foot) Oct. 21, 24.

1948-49: Maximum discharge during fiscal year, 135 million gallons a day (209 second-feet) Sept. 27 (gage height, 3.80 feet), from rating curve extended above 2 million gallons a day by test on model of station site; minimum, 0.03 million gallons a day (0.05 second-foot) on several days in March, May, and June.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversions.

Rating table, fiscal years 1947-49 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.01	0.9	1.37	1.6	14.7
.5	.04	1.0	2.3	1.9	24.0
.6	.16	1.1	3.55	2.3	39.6
.7	.39	1.2	5.2		
.8	.78	1.4	9.5		

Discharge, in million gallons a day, 1947-49

1947

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1									-	0.26	1.66	a0.6
2									-	.16	11.6	a.35
3									-	.29	6.1	a.35
4									-	.12	6.0	a.75
5									-	.23	.98	a.4
6									0.03	1.67	.33	a.15
7									.17	2.25	.24	.11
8									.04	.41	.18	.08
9									.15	.24	.22	.07
10									.20	.44	.39	.07
11									.03	.59	.47	.08
12									.02	1.52	.72	.31
13									1.18	.24	3.85	.20
14									.75	.11	.30	.10
15									.11	.08	.18	.07
16									1.13	.06	.11	.06
17									1.60	.05	.10	.05
18									.10	.04	.09	.08
19									.04	.04	.10	.05
20									.03	.03	.11	.38
21									.03	.03	1.38	.21
22									.02	.03	5.2	.52
23									.15	.03	.46	.33
24									.11	.34	.22	.56
25									.10	.67	.33	.41
26									.06	.16	.66	.78
27									.14	.49	a.8	1.45
28									1.75	.12	a1.8	1.55
29									4.9	.05	a.45	.60
30									1.31	.06	a.3	1.43
31									.32	-	a.25	-

a No gage-height record; discharge computed on basis of recorded range in stage and records for Halawa and Right Branch of East Fork Kawela Streams.

Discharge, in million gallons a day, of Punaula Stream near Pukoo, Molokai, 1947-49--Continued

1947-48

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.38	0.12	1.64	0.33	0.34	0.05	0.60	0.33	0.39	3.6	0.45	1.99
2	1.73	.08	.52	.16	.11	.06	3.3	1.16	.08	25	.7	.73
3	.46	.05	3.3	.11	.57	.10	2.3	2.05	.43	7	.15	.36
4	.44	.04	14.0	.09	.12	.12	.58	.48	.55	4	.1	.22
5	.69	.28	1.33	.08	.07	.56	.33	.55	.10	3	.1	.14
6	1.22	.09	1.57	.07	.04	1.24	.18	.24	.07	1.5	.1	.18
7	1.31	.04	.90	.06	.08	1.72	.11	1.44	.22	.6	.1	.14
8	.29	.07	.26	.05	.06	1.47	.09	.64	.52	.15	.1	.10
9	.20	.04	.18	.04	.09	1.21	.08	.22	.68	.15	.5	.08
10	.26	.21	1.08	.04	.26	2.1	.07	.14	.33	.1	1.1	.07
11	.22	.35	.91	.11	1.15	.56	.08	.11	.26	.2	.25	.06
12	.26	1.07	3.15	.49	.60	5.6	.37	.11	.39	.55	.25	.07
13	.20	.68	.52	.11	2.9	.85	.36	.09	.50	.2	1.8	.12
14	.12	2.8	.28	.16	1.72	.36	.09	.08	.24	.2	.8	.14
15	.11	.28	.22	.11	1.55	.42	.07	.07	.75	15	.3	.09
16	.10	.22	.24	.07	.45	.50	.05	.06	1.57	1.4	.2	.06
17	.09	1.14	.45	.05	.20	2.7	.04	.05	1.02	.55	5	.05
18	.07	.21	.36	.04	.47	1.64	.04	.05	.28	.15	1.1	.08
19	.06	.11	.12	.04	.26	1.00	.04	.05	.16	.15	1.6	.06
20	.26	.08	.10	.04	.12	.59	.21	.04	.39	.75	1.3	.11
21	.12	.14	.09	.03	.10	.39	.44	.06	.18	.15	.55	.11
22	.08	.18	3.55	.04	.08	.20	.09	.07	.58	.15	.3	.07
23	.13	.10	3.9	.04	.06	.21	7.3	.05	1.24	.55	.2	.63
24	.11	.27	.59	.03	1.06	.26	5.7	1.57	.66	.8	1.8	.30
25	.09	2.65	.22	.94	.76	.11	15.4	.78	.48	.45	.5	.45
26	.76	1.11	.16	8.2	.24	.42	41	4.2	1.07	1.2	.8	.22
27	1.36	.32	.11	.49	.10	.61	5.6	1.73	.54	.25	1.2	.28
28	.48	.22	.14	.18	.07	.22	1.49	.20	.96	.15	.6	.52
29	.23	.12	.36	.09	.15	.58	.97	.32	5.3	.85	.35	.80
30	.11	.35	2.95	.06	.08	.20	.98	-	2.3	1.4	.3	.59
31	.46	.24	-	.88	-	.12	2.75	-	1.92	-	.78	-

Peak discharge (base, 70 m.g.d.).--Sept. 4 (4 a.m.) 218 m.g.d. (337 sec.-ft.); Oct. 26 (12 m.) 88 m.g.d. (136 sec.-ft.); Dec. 12 (1:30 p.m.) 82 m.g.d. (127 sec.-ft.); Jan. 26 (9 p.m.) 325 m.g.d. (503 sec.-ft.); Apr. 2 (time unknown) 330 m.g.d. (511 sec.-ft.).

Note.--No gage-height record Apr. 2 to May 30; discharge computed on basis of records for Halawa and Right Branch of East Fork Kawela Streams.

1948-49

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.33	0.26	0.11	1.65	0.30	0.76	0.55	0.24	0.08	0.69	0.09	0.11
2	.90	.16	.25	.45	1.06	.52	1.66	.11	.08	.22	.08	.25
3	2.15	.11	.12	.26	.24	.44	.76	.09	.14	.18	.07	.26
4	.28	.10	.08	.16	.14	.28	.36	.08	.09	.10	.06	.10
5	.50	.10	.06	.24	.11	.28	.26	.07	.06	.87	.10	.07
6	.24	1.00	.05	.12	.09	.71	.95	.07	.04	.22	.06	.08
7	.33	.28	.09	.14	1.22	.38	.36	.09	.04	.11	.07	.05
8	1.35	.11	.07	.12	1.14	1.51	2.15	13.1	.04	.51	.06	.04
9	.81	.08	.06	.09	.33	1.30	1.78	.59	.04	.16	.04	.04
10	.30	.07	.06	.09	.30	1.61	1.06	.22	.03	.09	.04	.03
11	2.05	.53	.08	.72	.22	.60	1.01	.11	.08	3.9	.04	.04
12	.73	.20	.20	.28	.33	.78	.94	.09	1.12	1.39	.04	.41
13	.33	.23	.10	.20	.30	1.42	.26	.12	a5	.24	.10	.08
14	.48	.32	.06	.09	.18	.95	.20	.18	a.3	.26	.12	.05
15	1.89	2.3	.04	.07	.20	.59	.49	.18	.14	.16	.06	.04
16	.30	1.22	.04	.06	.32	.72	1.45	.12	.08	.11	.09	.03
17	1.35	.74	.06	.40	.30	.76	a10	.09	.05	.08	.04	.03
18	.71	1.65	.66	.11	.18	.45	a1.5	.08	.04	.11	.04	.05
19	.22	.39	.14	.07	.12	.30	a1.6	.07	.04	.16	.03	.04
20	.14	2.65	.08	2.6	.30	.95	a.6	.06	.03	.14	.03	.08
21	.11	.36	.05	1.26	.52	2.25	aa.25	.05	.03	.11	.03	.16
22	.10	1.19	.08	1.02	.53	2.85	a.2	.04	.18	1.08	.03	.18
23	.09	1.18	1.76	.52	.91	1.99	a.25	.04	.09	3.05	.03	.87
24	.13	.33	.45	.22	1.07	7.1	a.2	.05	.06	3.5	.03	.16
25	.23	.26	.14	.79	.36	.82	a1.5	.04	.11	.33	.06	.07
26	.14	.16	.24	.56	.33	2.2	a.55	.04	.10	.53	.09	.04
27	1.12	.12	6.2	.88	.74	1.08	a1.8	.20	.05	.46	.47	.04
28	.36	.35	5.4	.90	.50	1.83	.52	.54	.59	.24	1.85	.08
29	1.60	.20	.86	.68	1.83	1.73	.22	-	1.86	.16	.60	.20
30	.53	.14	.84	.48	.92	2.7	.26	-	1.04	.12	.16	2.1
31	.68	.34	-	.58	-	1.83	.11	-	1.01	-	.10	-

Peak discharge (base, 70 m.g.d.).--Sept. 27 (10:30 p.m.) 135 m.g.d. (209 sec.-ft.); Jan. 17 (4 a.m.) about 76 m.g.d. (118 sec.-ft.); Feb. 8 (10 a.m.) 76 m.g.d. (118 sec.-ft.).

a No gage-height record; discharge computed on basis of records for Halawa and Right Branch of East Fork Kawela Streams.

Monthly discharge, in million gallons a day, of Punaula Stream near Pukoo, Molokai, 1947-49

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March 6-31,1947	4.9	0.02	0.557	0.862	14.5	44
April	2.25	.03	.360	.557	10.8	33
May	11.6	.09	1.47	2.27	45.6	140
June	1.55	.05	.405	.627	12.2	37
The period	-	-	-	-	-	254
July 1947	1.73	.06	.400	.619	12.4	38
August	2.8	.04	.441	.682	13.7	42
September	14.0	.09	1.44	2.23	43.2	133
October	8.2	.03	.427	.661	13.2	41
November	2.9	.04	.462	.715	13.9	43
December	5.6	.05	.844	1.31	26.2	80
Calendar year	-	-	-	-	-	-
January 1948	41	.04	2.93	4.53	90.7	278
February	4.2	.04	.584	.904	16.9	52
March	5.3	.07	.779	1.21	24.2	74
April	25	.1	2.34	3.62	70.2	215
May	5	.1	.754	1.17	23.4	72
June	1.99	.05	.294	.455	8.82	27
Fiscal year 1947-48	41	.03	.975	1.51	357	1,100
July 1948	2.15	.09	.661	1.02	20.5	63
August	2.65	.07	.553	.856	17.1	53
September	6.2	.04	.614	.950	18.4	57
October	2.6	.06	.510	.789	15.8	49
November	1.83	.09	.503	.778	15.1	46
December	7.1	.28	1.34	2.07	41.7	128
Calendar year 1948	41	.04	.991	1.53	363	1,110
January	10	.11	1.09	1.69	33.8	104
February	13.1	.04	.599	.927	16.8	51
March	5	.03	.408	.631	12.6	39
April	3.9	.08	.643	.995	19.3	59
May	1.85	.03	.152	.235	4.71	14
June	2.1	.03	.193	.299	5.78	18
Fiscal year 1948-49	13.1	.03	.607	.939	222	681

Left Branch Makamakaole Stream near Waihee

Location (revised).--Combined orifice and concrete control, lat. 20°57'35", long. 156°32'55", at intake to Marshall Ranch diversion ditch on left branch, a quarter of a mile upstream from confluence with main stream, 3 miles northwest of Waihee, and 2¾ miles south of Kahakuloa village. Altitude of gage is 1,500 feet (by barometer).

Drainage area.--0.4 square mile.

Records avaialble.--July 1939 to June 1949.

Average discharge.--10 years, 1.86 million gallons a day (2.88 second-feet).

Extremes.--Maximum discharge during year, 106 million gallons a day (164 second-feet) Mar. 13 (gage height, 3.28 feet), from rating curve extended above 20 million gallons a day by test on model of station site; minimum, 0.58 million gallons a day (0.90 second-foot) Sept. 18, 20, 22.

1939-49: Maximum discharge, 287 million gallons a day (444 second-feet) Apr. 2, 1948 (gage height, 4.98 feet), from rating curve extended above 20 million gallons a day by test on model of station site; minimum, 0.43 million gallons a day (0.66 second-foot) Jan. 10, 11. 1946.

Remarks.--Records good. Marshall Ranch diversion ditch diverts water from gage pool for watering stock.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.18	1.09	0.75	3.35	1.15	1.09	1.80	1.12	0.82	0.90	1.15	1.37
2	1.14	1.01	1.42	1.54	1.03	1.06	1.53	.98	.82	.90	1.09	1.22
3	1.34	.94	.80	1.23	.90	1.06	1.43	2.55	.80	.80	1.03	1.22
4	.86	.94	.71	.94	.82	.90	1.22	3.2	.80	.86	1.41	1.03
5	1.03	.90	.69	.86	.80	.86	1.09	1.64	.80	2.65	1.09	.94
6	.86	2.3	.68	.82	.75	.92	.98	1.03	.77	1.22	1.79	.86
7	1.52	1.16	.69	.90	.75	.82	.98	1.03	.77	.94	.90	.82
8	.90	1.03	.67	.80	2.5	1.71	2.45	23	1.18	1.09	.80	.80
9	.82	.90	.79	.80	.98	2.1	3.1	3.0	.86	.90	.75	.75
10	.76	.86	.69	.75	.86	2.15	1.89	2.0	.77	.86	.72	.72
11	10.7	1.07	.78	2.45	1.73	1.76	9.1	1.62	1.33	1.84	.72	1.51
12	2.05	.94	.74	.98	.94	2.3	3.15	1.45	2.05	1.45	.71	4.2
13	2.65	.98	.68	.82	.86	2.45	1.80	1.29	18.8	.98	.72	1.32
14	2.15	.82	.63	.80	.90	2.35	1.53	1.23	2.45	.94	.71	1.36
15	2.05	4.8	.62	1.38	.91	1.53	1.45	1.15	1.62	1.54	.69	1.04
16	1.29	2.55	.62	1.24	1.16	2.9	3.2	1.09	1.29	2.75	.68	.86
17	1.98	1.22	.61	.82	1.60	1.71	9.5	1.09	1.09	1.09	.67	.86
18	2.25	1.23	.58	.77	1.44	1.53	3.0	.98	.98	1.03	.67	.90
19	1.29	.94	.62	1.08	1.03	1.29	3.15	.98	.94	.90	.69	1.68
20	1.09	1.20	.59	3.45	.86	1.29	2.25	.98	.94	.86	.68	1.15
21	1.03	.90	.61	2.55	.82	2.65	1.80	.94	.90	1.40	.69	1.10
22	.94	1.20	.59	1.29	.82	2.1	1.53	.94	.98	1.79	.67	.50
23	.86	2.2	1.40	1.09	.93	2.05	1.37	.98	.90	7.9	.65	1.65
24	1.25	1.03	.78	.90	.94	16.3	1.58	.94	.84	6.1	.65	1.38
25	.86	.90	.66	1.02	.86	3.4	1.37	.90	.86	1.90	1.51	1.02
26	.86	.82	.60	1.92	.82	2.45	1.29	.90	1.08	3.4	4.6	.88
27	.97	.80	7.0	1.94	1.99	2.2	3.25	.86	.86	2.8	13.1	.77
28	3.05	.77	1.90	1.72	2.1	2.25	1.75	.86	.90	1.71	2.85	.75
29	1.15	.77	.90	1.37	1.96	2.35	1.22	-	1.11	1.45	2.4	.72
30	1.03	.88	2.85	1.16	1.22	3.6	1.15	-	1.45	1.29	1.62	.71
31	1.87	.90	-	1.40	-	2.55	1.09	-	1.41	-	1.90	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	10.7	0.76	1.67	2.58	51.8	159
August	4.8	.77	1.23	1.90	38.0	117
September	7.0	.58	1.06	1.64	31.6	97
October	3.45	.75	1.36	2.10	42.1	129
November	2.5	.75	1.15	1.78	34.1	106
December	16.3	.82	2.38	3.68	73.7	226
Calendar year 1948	56	.58	2.21	3.42	807	2,480
January	9.5	.98	2.32	3.59	72.0	221
February	23	.86	2.10	3.25	58.7	180
March	18.8	.77	1.65	2.55	51.2	157
April	7.9	.80	1.81	2.80	54.2	166
May	13.1	.65	1.56	2.41	48.3	148
June	4.2	.50	1.14	1.76	34.1	105
Fiscal year 1948-49	23	.50	1.62	2.51	590	1,810

Peak discharge (base, 90 m.g.d.).--Feb. 8 (12 m.) 94 m.g.d. (145 sec.-ft.); Mar. 13 (5:30 a.m.) 106 m.g.d. (164 sec.-ft.).

Kahakuloa Stream near Honokohau

Location.--Columbus-type concrete control, lat. 20°58'50", long. 156°33'25", just downstream from confluence with lowest tributary, 1.3 miles south of Kahakuloa, and 2 miles west of Puu Makawana.

Drainage area.--3.4 square miles.

Records available.--July 1939 to August 1943, September 1947 to June 1949. January 1913 to December 1914 fragmentary records at site about 1 mile upstream.

Extremes.--Maximum discharge during year, 265 million gallons a day (410 second-feet) Dec. 24 (gage height, 5.06 feet), from rating curve extended above 30 million gallons a day by logarithmic plotting; minimum, 2.95 million gallons a day (4.56 second-feet) May 23-25.

1939-43, 1947-49: Maximum discharge, 1,990 million gallons a day (3,080 second-feet) Dec. 14, 1942 (gage height, 7.02 feet), from rating curve extended above 55 million gallons a day by test on model of station site; minimum, 2.9 million gallons a day (4.5 second-feet) June 22, 23, 1943.

Remarks.--Records good below 100 million gallons a day, poor above. No diversions.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

3.0	3.05	3.5	18.2
3.1	4.8	3.6	23.5
3.2	7.0	3.8	37
3.3	9.9	4.0	56
3.4	13.7	4.2	80

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.1	7.2	4.6	27.5	8.4	4.8	7.0	4.7	3.4	4.8	4.6	5.9
2	10.9	6.5	9.3	8.8	5.7	4.8	9.7	4.4	3.4	4.8	4.3	7.2
3	11.1	8.1	5.2	7.6	4.8	5.2	9.3	16.6	3.95	4.1	4.1	5.5
4	6.6	7.1	4.6	5.2	4.4	4.3	5.5	25	4.3	4.3	7.0	4.4
5	9.2	5.7	4.4	4.6	4.3	4.1	5.2	8.4	3.4	19.1	6.3	5.8
6	6.6	22	4.4	4.4	4.1	5.3	5.0	5.0	3.2	5.9	14.1	4.4
7	15.5	7.1	4.6	4.8	4.1	4.3	4.8	4.6	3.2	4.6	5.0	3.75
8	6.8	5.7	4.3	4.3	13.3	10.1	12.2	73	7.8	7.7	4.3	3.6
9	6.1	5.5	4.6	4.1	5.2	15.5	16.5	11.2	4.3	4.6	4.1	3.6
10	5.6	5.0	4.4	3.9	4.6	12.3	8.3	6.3	3.6	4.4	3.9	3.4
11	58	8.1	4.6	16.5	9.5	7.6	45	5.7	10.8	14.9	3.9	5.5
12	12.4	6.3	4.8	5.5	5.7	13.7	14.5	5.6	10.9	12.3	3.75	20.5
13	17.3	6.1	4.3	4.4	5.7	12.5	6.6	5.2	7.3	5.4	3.75	6.1
14	11.5	5.5	4.1	4.4	5.2	10.6	5.5	4.8	9.4	5.0	4.1	8.8
15	11.5	44	3.9	7.3	5.0	6.3	5.5	4.6	5.9	7.4	3.6	5.8
16	6.8	15.9	3.9	7.9	8.5	13.6	8.2	5.0	4.4	16.0	3.4	3.9
17	13.1	10.7	3.9	4.8	9.5	6.8	53	4.4	4.1	4.8	3.4	3.75
18	19.0	14.3	3.75	4.3	7.7	6.3	11.9	4.3	3.9	4.6	3.2	4.3
19	7.9	6.3	3.9	7.6	5.5	5.9	10.9	4.1	3.75	4.3	3.2	5.6
20	6.8	12.9	3.9	25.5	4.4	5.7	7.4	3.9	3.6	4.3	3.2	10.8
21	7.0	6.3	3.9	22	5.4	22	6.3	3.75	3.4	7.8	3.05	5.9
22	6.6	9.7	3.75	8.5	4.8	13.5	5.5	3.75	4.3	23.5	3.05	6.1
23	5.9	15.6	16.3	8.0	8.0	9.1	5.2	3.6	3.75	53	3.05	11.7
24	7.2	6.4	5.8	5.5	5.3	76	6.3	3.6	3.6	41	3.05	7.1
25	5.9	5.5	4.3	6.5	4.6	17.9	10.0	3.6	3.65	8.1	4.0	5.8
26	6.1	5.0	3.9	11.1	4.4	12.4	14.4	3.6	6.2	20.5	9.2	4.6
27	7.5	4.8	30.5	12.2	9.4	10.6	31	3.6	4.7	13.3	40	3.75
28	22.5	5.2	13.2	9.4	14.2	12.6	9.4	3.9	6.1	7.0	15.4	3.75
29	7.3	4.8	5.7	9.4	10.4	14.3	5.5	-	10.2	5.5	15.7	3.6
30	6.1	5.9	22	7.6	6.4	20.5	5.0	-	11.5	5.2	6.1	3.6
31	11.4	5.7	-	8.2	-	13.4	4.8	-	8.8	-	8.3	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	58	5.6	11.1	17.2	345	1,060
August	44	4.8	9.19	14.2	285	874
September	30.5	3.75	6.69	10.4	201	616
October	27.5	3.9	8.77	13.6	272	834
November	14.2	4.1	6.62	10.2	198	609
December	76	4.1	12.3	19.0	382	1,170
Calendar year 1948	342	3.4	12.6	19.5	4,610	14,160
January	53	4.8	11.5	17.8	355	1,090
February	73	3.6	8.44	13.1	236	725
March	11.5	3.2	5.51	8.53	171	524
April	53	4.1	10.9	16.9	328	1,010
May	40	3.05	6.58	10.2	204	626
June	20.5	3.4	5.95	9.21	178	548
Fiscal year 1948-49	76	3.05	8.65	13.4	3,160	9,690

Peak discharge (base, 400 m.g.d.).--No peak above base.

Honokohau Stream near Honokohau

Location.--Masonry dam control, lat. 20°57'45", long. 156°35'20", 1,000 feet upstream from intake of Honokohau ditch and 5 miles southeast of Honokohau. Altitude of gage, 950 feet (by barometer).

Drainage area.--4.2 square miles.

Records available.--March 1913 to September 1920, May 1922 to June 1949.

Average discharge.--31 years (1916-20, 1922-49), 25.4 million gallons a day (39.3 second-feet).

Extremes.--Maximum discharge during year, 720 million gallons a day (1,110 second-feet) Aug. 15 (gage height, 5.36 feet), from rating curve extended above 120 million gallons a day by logarithmic plotting; minimum, 9.2 million gallons a day (14.2 second-feet) June 10, 11, 16, 17, 29, 30.

1913-20, 1922-49: Maximum discharge, 2,420 million gallons a day (3,740 second-feet) Dec. 14, 1942 (gage height, 8.40 feet), from rating curve extended above 120 million gallons a day by logarithmic plotting; minimum, 5.4 million gallons a day (8.4 second-feet) May 1, 1945, Jan. 5, 1946.

Remarks.--Records good except those for periods of no gage height record, which are fair. No diversions above station.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

2.0	9.4	2.7	45
2.1	12.4	3.0	73
2.3	20	3.3	114
2.5	31		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23.5	17.2	12.8	48	21	11.8	17	11.8	10.9	13.8	10.9	13.4
2	39	17.0	23.5	17.4	15	14.5	23	11.8	10.6	14.2	10.6	21
3	33	19.9	13.8	19.3	13	13.8	22	15.3	20	12.1	10.6	13.4
4	30	23.5	12.4	12.4	12	11.5	12.8	15.9	13.4	11.8	12.4	11.2
5	32.5	14.2	12.4	12.8	12	10.6	11.8	12.8	10.9	47	12.4	17.1
6	36.5	44	12.4	11.8	11	21.5	12.4	11.8	10.6	13.1	22.5	10.9
7	52	17.0	13.1	12.1	11	10.9	12.1	11.8	10.3	13.1	12.1	10.0
8	42	13.8	12.4	11.2	40	38	29	91	28.5	21	10.6	9.7
9	19.8	13.8	13.8	10.9	13	39	28.5	15.2	12.1	13.1	10.0	9.4
10	20.5	13.1	14.6	11.2	12	38	17.8	12.4	12.1	11.8	10.0	9.4
11	84	28	15.6	39.5	27	18.7	41	12.4	22	59	10.3	15.0
12	21	16.2	13.4	13.8	14	37	15.9	12.4	20	42	10.0	24.5
13	20	18.1	12.1	13.4	14	30.5	12.4	19.6	116	12.8	21.5	13.1
14	18	13.8	11.8	12.4	13	20.5	11.8	17.4	15.9	12.8	12.1	12.1
15	33	109	11.5	20	13	17.2	13.4	13.1	12.8	13.8	10.0	10.6
16	16.9	25	11.5	18.6	24	34	15.3	18.4	11.2	19.6	9.7	9.4
17	42	16.8	11.5	14.4	27	14.8	106	12.4	10.9	10.9	9.7	9.4
18	58	23	11.2	12.1	22	17.0	19.2	11.5	10.3	11.5	9.4	10
19	19.6	14.2	11.8	21	14	14.8	17.5	11.2	10.3	11.8	9.4	13
20	16.7	59	11.8	50	11	19.1	13.4	10.9	10.0	10.9	9.4	20
21	17.5	15.2	12.8	33	14	86	12.1	10.9	10.0	13.4	9.4	13
22	16.3	27.5	11.2	26	12	63	11.8	10.9	22	41	9.4	14
23	15.9	30	45	24.5	21	23	11.8	10.9	12.4	70	9.4	21
24	19.0	15.4	16.1	15.6	13	110	13.1	10.6	11.8	102	9.4	15
25	14.8	13.4	12.1	19.1	11.5	44	15.8	10.6	24	17.8	10.0	13
26	15.6	13.1	11.5	22.5	22	29	25.5	10.6	17.4	67	10.3	11
27	25	12.8	50	33	27	25	52	10.9	32.5	28	19.2	9.3
28	44	16.8	27.5	32.5	31	29	17.9	16.3	28	15.2	39.5	9.3
29	21	14.8	13.4	39.5	23.5	35	12.4	-	42	11.8	30.5	9.2
30	15.8	15.6	48	18.9	13.4	50	12.1	-	56	12.1	11.2	9.2
31	29.5	15.7	-	19.3	-	28	12.0	-	26	-	11.5	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	84	14.8	28.8	44.6	892	2,740
August	109	12.8	22.8	35.3	707	2,170
September	50	11.2	17.0	26.3	511	1,570
October	50	10.9	21.5	33.3	666	2,040
November	40	11	17.6	27.2	527	1,620
December	110	10.6	30.8	47.7	955	2,930
Calendar year 1948	409	8.5	28.4	43.9	10,380	31,870
January	106	11.8	20.9	32.3	649	1,990
February	91	10.6	15.7	24.3	441	1,350
March	116	10.0	21.3	33.0	661	2,030
April	102	10.9	25.1	38.8	754	2,320
May	39.5	9.4	13.0	20.1	403	1,240
June	24.5	9.2	12.9	20.0	387	1,190
Fiscal year 1948-49	116	9.2	20.7	32.0	7,550	23,190

Peak discharge (base, 700 m.g.d.).--Aug. 15 (7 p.m.) 720 m.g.d. (1,110 sec.-ft.).

Note.--No gage-height record Nov. 1-24, Dec. 23 to Jan. 3, June 18-30; discharge computed on basis of recorded range in stage and records for Kahakuloa and Left Branch Makamakaole Streams.

Honokowai ditch near Lahaina

Location.--Lat. 20°56'00", long. 156°37'30", just downstream from intake on Honokowai Stream, 2½ miles upstream from Pioneer Mill Co.'s power house, and 5½ miles (revised) northeast of Lahaina. Altitude of gage is 1,900 feet (from topographic map).

Records available.--July 1912 to June 1949.

Average discharge.--30 years (1919-49), 5.85 million gallons a day (9.05 second-feet).

Extremes.--Maximum daily discharge during year, 19.5 million gallons a day (30.2 second-feet) Apr. 26; minimum daily, 3.6 million gallons a day (5.57 second-feet) Jan. 21. 1912-49: Maximum daily discharge, 43 million gallons a day (66 second-feet) June 30, 1930; no flow occasionally.

Remarks.--Ditch diverts water for power and irrigation from Honokowai Stream just above station.

Cooperation.--Records of daily discharge since July 1932 furnished by Pioneer Mill Co.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	7.8	6.5	8.9	9.9	5.3	6.6	5.2	5.0	6.5	6.6	8.2
2	12.0	8.3	8.4	7.4	6.5	6.0	8.4	5.2	5.0	6.8	6.3	6.6
3	9.8	7.6	6.8	8.2	5.9	6.3	9.5	5.2	5.3	5.7	5.8	6.2
4	9.0	9.6	6.2	6.4	5.8	5.8	5.8	5.2	5.6	5.5	5.8	7.3
5	10.9	6.6	6.2	6.1	5.7	6.0	5.4	5.2	5.1	11.4	5.8	6.2
6	10.2	10.3	6.3	6.1	5.7	8.7	5.6	5.2	5.0	5.8	7.4	6.4
7	12.7	7.6	6.1	6.0	5.7	5.9	6.1	5.2	5.0	5.7	6.2	5.6
8	11.4	6.9	6.1	5.8	8.1	11.0	9.3	12.2	7.9	7.7	5.9	5.5
9	7.4	6.6	6.1	5.9	5.7	12.8	11.0	6.0	5.6	5.7	5.7	5.5
10	6.6	6.6	6.1	6.1	5.6	11.6	7.5	5.3	5.4	5.5	5.7	5.5
11	12.0	9.3	6.5	11.0	5.3	7.8	6.8	5.2	5.2	14.5	5.8	5.6
12	8.3	7.4	6.8	6.6	7.3	12.3	7.1	5.0	5.7	13.8	5.8	7.9
13	6.9	7.0	6.2	6.1	6.1	11.6	5.8	7.8	17.2	6.9	9.0	6.4
14	6.9	6.9	6.1	6.0	5.6	9.1	5.5	7.5	6.0	6.3	6.6	5.9
15	10.2	11.4	6.0	6.0	6.1	7.6	5.5	6.1	5.3	6.3	6.1	5.6
16	7.6	9.6	6.0	6.2	14.1	10.7	6.4	7.4	5.2	7.0	5.8	5.7
17	13.7	6.6	6.0	6.3	6.8	7.0	13.3	5.3	5.2	6.1	5.7	5.7
18	14.8	6.7	6.0	6.2	5.7	8.2	8.0	5.1	5.2	5.8	5.8	5.7
19	8.1	6.9	6.0	6.6	5.6	7.0	7.1	5.2	5.1	5.6	5.8	5.7
20	7.1	14.0	6.2	10.6	5.6	10.5	5.8	5.4	5.0	6.3	5.8	5.6
21	6.6	7.4	6.3	9.2	5.5	16.6	3.6	5.2	5.0	6.5	5.8	5.4
22	6.6	11.7	6.3	9.7	5.8	16.5	5.6	5.0	8.0	10.2	5.8	6.9
23	6.6	9.2	9.3	9.2	10.8	10.7	5.7	5.0	5.8	13.0	5.8	10.9
24	6.7	7.1	7.2	7.1	8.4	18.5	5.6	5.0	5.5	17.6	5.8	5.8
25	7.1	6.5	6.5	8.1	5.9	13.2	5.4	5.0	8.5	8.1	5.7	5.4
26	6.6	6.3	6.5	9.0	9.9	12.3	5.2	5.0	8.2	19.5	5.7	5.5
27	10.1	6.3	10.6	11.8	9.3	8.2	8.9	5.0	11.6	11.6	5.8	5.5
28	11.7	6.3	9.8	12.4	11.5	12.9	6.9	5.5	12.0	7.2	11.3	5.5
29	8.0	6.4	6.6	15.0	9.2	12.9	5.5	-	13.2	7.0	10.8	5.5
30	6.7	7.4	9.5	8.0	6.2	13.0	5.4	-	16.4	6.6	5.8	6.2
31	10.3	7.2	-	7.6	-	9.6	5.3	-	10.4	-	5.6	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14.8	6.6	9.03	14.0	280	859
August	14.0	6.3	7.92	12.3	246	753
September	10.6	6.0	6.84	10.6	205	630
October	15.0	5.8	7.92	12.3	246	754
November	14.1	5.3	7.18	11.1	215	661
December	18.5	5.3	10.2	15.8	316	969
Calendar year 1948	19.2	4.8	7.89	12.2	2,890	8,860
January	13.3	3.6	6.76	10.5	210	643
February	12.2	5.0	5.74	8.88	161	493
March	17.2	5.0	7.25	11.2	225	689
April	19.5	5.5	8.41	13.0	252	774
May	11.3	5.6	6.36	9.84	197	605
June	10.9	5.4	6.18	9.56	185	569
Fiscal year 1948-49	19.5	3.6	7.50	11.6	2,740	8,400

208538 O - 52 - 6

Olowalu ditch near Olowalu

Location (revised).--Parshall flume control, lat. 20°49'30", long. 156°36'50", 114 feet upstream from intake of pipe line to hydroelectric plant, 1¼ miles northeast of Olowalu, and 5½ miles southeast of Lahaina.

Records available.--August 1911 to June 1949.

Average discharge.--31 years (1917-20, 1921-49), 4.91 million gallons a day (7.60 second-feet).

Extremes.--Maximum daily discharge during year, 10.7 million gallons a day (16.6 second-feet) July 11; minimum daily, 2.05 million gallons a day (3.17 second-feet) Dec. 7. 1911-49: Maximum daily discharge, 13.7 million gallons a day (21.2 second-feet) Apr. 17, 1935; no flow occasionally.

Remarks.--Ditch diverts water from Olowalu Stream at altitude of about 450 feet. Water used for power and irrigation.

Cooperation.--Records of daily discharges since January 1932 furnished by Pioneer Mill Co.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.7	4.0	2.95	4.6	5.1	3.4	7.2	4.1	3.1	4.0	4.6	3.15
2	4.9	5.2	3.45	3.15	3.95	3.0	6.7	4.0	3.05	3.6	4.3	3.9
3	4.6	4.4	2.95	3.05	3.4	2.65	6.7	4.2	3.25	3.45	4.0	3.65
4	5.0	4.5	2.8	2.65	3.05	2.25	5.6	4.4	3.15	3.35	3.75	3.2
5	5.5	3.9	2.7	2.5	2.9	2.1	5.0	4.0	3.05	6.6	3.6	3.3
6	5.6	6.3	2.7	2.4	2.8	2.35	5.7	3.85	2.9	4.5	4.0	2.95
7	7.8	5.1	2.7	2.45	2.7	2.05	5.4	3.8	2.8	3.95	3.55	2.75
8	6.6	4.2	2.6	2.3	4.2	2.8	4.4	9.4	4.4	4.8	3.25	2.65
9	5.3	3.9	2.7	2.25	3.45	4.1	3.9	8.3	3.05	3.9	3.1	2.6
10	5.6	3.6	2.6	2.3	3.0	3.75	5.8	6.5	2.95	3.5	2.95	2.5
11	10.7	4.4	2.65	5.1	2.9	4.9	5.8	5.5	3.15	5.7	2.85	2.6
12	7.6	3.7	2.5	3.05	2.85	6.0	5.8	5.0	3.2	7.9	2.75	3.05
13	5.3	3.5	2.45	2.7	2.85	6.7	6.4	4.7	7.0	5.6	3.55	3.05
14	5.0	3.3	2.4	2.5	2.7	5.6	5.8	4.5	3.9	4.8	2.95	2.95
15	5.0	4.9	2.4	2.4	2.7	4.4	8.3	4.3	3.35	4.0	2.8	2.75
16	4.5	7.6	2.4	2.3	3.3	4.7	9.4	4.2	3.05	4.3	2.8	2.65
17	6.6	4.9	2.3	2.5	3.05	3.9	9.7	4.0	2.9	3.55	2.8	2.6
18	8.9	4.2	2.3	2.35	2.7	3.55	9.7	3.85	2.8	3.4	2.7	2.55
19	7.2	3.8	2.3	2.75	2.6	3.35	9.6	3.75	2.75	3.35	2.65	2.5
20	5.5	6.3	2.25	2.6	2.5	3.4	6.9	3.7	2.65	3.25	2.7	2.45
21	4.8	4.3	2.3	4.9	2.5	6.4	4.8	3.6	2.6	3.25	2.65	2.45
22	4.4	4.4	2.2	3.85	2.45	7.6	5.6	3.45	3.05	5.7	2.55	3.0
23	3.95	4.9	3.0	5.3	3.3	7.3	6.3	3.45	2.65	8.2	2.55	4.6
24	4.1	4.1	2.55	3.75	2.6	8.2	5.9	3.35	2.6	9.1	2.55	3.1
25	3.7	3.7	2.35	3.55	2.5	6.9	5.5	3.3	3.2	8.2	2.6	2.75
26	3.65	3.4	2.25	3.55	2.65	6.7	5.1	3.25	3.05	8.6	2.55	2.55
27	3.8	3.25	2.9	7.2	5.0	6.7	5.4	3.4	3.05	8.5	3.15	2.45
28	5.3	3.25	3.8	8.0	6.0	6.7	5.2	3.3	3.4	7.8	3.9	2.4
29	5.0	3.1	2.55	6.0	5.9	6.8	4.6	-	6.4	6.5	5.4	2.5
30	4.1	3.05	3.05	4.8	3.95	7.0	4.4	-	7.6	5.3	3.35	2.55
31	4.5	3.1	-	4.1	-	7.0	4.2	-	5.7	-	3.1	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	10.7	3.65	5.46	8.45	169	519
August	7.6	3.05	4.27	6.61	132	406
September	3.8	2.2	2.64	4.08	79.0	243
October	8.0	2.25	3.58	5.54	111	340
November	6.0	2.45	3.32	5.14	99.6	306
December	8.2	2.05	4.91	7.60	152	467
Calendar year 1948	10.7	2.05	5.43	8.40	1,990	6,100
January	9.7	3.9	6.15	9.52	191	586
February	9.4	3.25	4.40	6.81	123	378
March	7.6	2.6	3.54	5.48	110	337
April	9.1	3.25	5.29	8.18	159	487
May	5.4	2.55	3.23	5.00	100	307
June	4.6	2.4	2.87	4.44	86.2	264
Fiscal year 1948-49	10.7	2.05	4.14	6.41	1,510	4,640

Oheo Stream below diversion dam, near Kipahulu

Location.--Lat. 20°41'05", long. 156°04'10", just downstream from old diversion dam, 2 miles northwest of Kipahulu, and 2½ miles upstream from mouth. Altitude of gage is 1,550 feet (from topographic map).
Drainage area.--5.8 square miles.
Records available.--February 1927 to September 1929, December 1931 to June 1949.
Average discharge.--12 years (1932-35, 1940-49), 44.8 million gallons a day (69.3 second-feet).
Extremes.--Maximum discharge during year, 3,070 million gallons a day (4,750 second-feet) Dec. 1 (gage height, 9.80 feet), from rating curve extended above 750 million gallons a day by test on model of station site; minimum, 0.02 million gallons a day (0.03 second-foot) Mar. 21, 22.
1927-29, 1931-49: Maximum discharge, 6,000 million gallons a day (9,280 second-feet) Mar. 4, 1939, estimated on basis of computation of flow over dam at peak flow; no flow at times.
Revisions.--The figures of maximum discharge for fiscal years 1932-35, 1937-40 have been revised, as shown in the following table. They supersede those published in the Water-Supply papers indicated.

Water-Supply Paper	Fiscal year	Date	Gage height (feet)	Discharge		Water-Supply Paper	Fiscal year	Date	Gage height (feet)	Discharge	
				Million gallons a day	Second-feet					Million gallons a day	Second-feet
755...	1931-32	Feb.13	10.00	3,500	5,420	835...	1936-37	Dec.29	10.30	2,400	3,710
755...	1932-33	Jan. 4	11.95	5,100	7,890	865...	1937-38	Jan 20	*12.40	4,860	7,520
770...	1933-34	Dec.22 24.	10.00	3,500	5,420	885...	1938-39	Mar. 4	-	†6,000	†9,280
						905...	1939-40	Sept.3	9.76	3,070	4,750
795...	1934-35	July 6	*10.59	2,800	4,330						

* Maximum recorded.
† Estimated on basis of computation of flow over dam at peak flow.

Remarks.--Records good except those for period of no gage-height record, which are poor. Small diversion below station for domestic supply and livestock.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.1	2.75	1.16	1.89	14.4	448	151	0.51	0.24	53	0.5	0.14
2	25.5	.85	4.3	.56	3.5	47	674	.48	.25	44	.4	4.5
3	82	31.5	5.1	8.8	1.91	19.6	102	1.97	.39	5.6	.3	11.6
4	31.5	25.5	.46	3.0	1.07	34.5	9.0	1.34	.27	1.19	.25	3.35
5	70	10.0	.31	51	1.19	9.7	10.0	12.8	.47	5.5	.6	4.5
6	102	96	.88	4.8	.60	20	7.8	5.7	1.80	2.55	.9	.52
7	117	11.7	39	.81	.31	7.6	2.65	58	.18	2.75	.45	.18
8	44	1.93	1.50	.31	94	64	90	712	.93	9.2	.25	.10
9	25.5	6.7	3.95	.24	53	174	89	22	.65	.70	.15	.06
10	18.6	1.13	.84	.40	7.7	273	5.0	14.0	.27	.45	.08	.04
11	7.5	23.5	2.65	.83	60	37	3.9	16.2	11.5	18.3	.05	.03
12	7.1	25.5	4.2	3.25	246	179	5.6	33.5	.77	27	.04	.19
13	2.7	11.6	.39	.25	21	178	1.17	74	14.3	1.98	6	.04
14	.86	9.8	.24	.48	9.4	49	1.02	93	.99	.72	3	.03
15	53	214	.22	12.3	2.1	30.5	.94	102	.68	.54	60	.06
16	5.2	728	.24	17.9	70	108	.76	98	.27	.48	7	.03
17	97	24	.20	2.25	15.5	87	22	11.8	.12	.33	2	.03
18	70	34.5	.19	.75	2.55	98	223	2.45	.09	.29	1.0	.03
19	11.8	13.3	14.3	4.9	8.3	25	344	1.04	.07	.39	.60	.03
20	2.15	77	1.75	.48	2.2	107	79	3.45	.04	.33	.48	3.75
21	.94	9.5	1.50	1.00	17.1	229	197	.90	.03	.34	.39	26.5
22	.57	132	.24	10.5	30	346	5.3	.68	53	1.19	.27	47
23	.45	149	206	8.0	32	241	8.3	.54	95	.40	.20	27
24	6.6	52	265	6.0	87	658	6.4	.39	95	.63	.14	3.35
25	4.6	6.4	2.8	18.4	212	115	7.0	.33	145	5.1	.12	5.0
26	20	2.0	.60	23	136	85	4.8	.42	51	35	.10	1.15
27	70	1.19	59	54	167	62	.76	.34	126	11	1.86	.60
28	78	3.5	116	153	128	116	.63	.46	117	4	9.6	2.18
29	14.7	2.9	2.35	176	62	163	.57	-	58	1.0	13.0	6.1
30	12.6	9.3	.70	64	404	140	.54	-	174	.7	.23	18.6
31	9.6	16.0	-	18.4	-	45	.54	-	112	-	.11	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	117	0.45	32.2	49.8	999	3,060
August	728	.85	55.9	86.5	1,730	5,320
September	265	.19	24.5	37.9	736	2,260
October	176	.24	20.9	32.3	648	1,990
November	404	.31	63.0	97.5	1,890	5,800
December	658	7.6	135	209	4,200	12,880
Calendar year 1948	1,060	.04	53.4	82.6	19,540	59,960
January	674	.54	66.2	102	2,050	6,300
February	712	.33	45.3	70.1	1,270	3,890
March	174	.03	34.2	52.9	1,060	3,250
April	63	.29	9.90	15.3	297	912
May	60	.04	3.55	5.49	110	338
June	47	.03	5.56	8.60	167	512
Fiscal year 1948-49	728	.03	41.5	64.2	15,160	46,510

Peak discharge (base, 1,600 m.g.d.).--Aug. 16 (9 a.m.) 2,950 m.g.d. (4,560 sec.-ft.); Nov. 27 (10:30 p.m.) 1,820 m.g.d. (2,820 sec.-ft.); Dec. 1 (2 a.m.) 3,070 m.g.d. (4,750 sec.-ft.).
Note.--No gage-height record Apr. 27 to May 18; discharge computed on basis of records for Right Branch Kahalawe Stream and recorded range in stage.

Right Branch Kahalawe Stream near Kipahulu

Location.--Columbus control, lat. 20°41'05", long. 156°03'00", at old ditch intake, 2 miles north of Kipahulu. Altitude of gage, 1,100 feet (from topographic map).

Records available.--February 1927 to June 1949.

Average discharge.--19 years (1927-34, 1935-36, 1938-49), 3.54 million gallons a day (5.48 second-feet).

Extremes.--Maximum discharge during year, 312 million gallons a day (483 second-feet) Aug. 16 (gage height, 3.35 feet), from rating curve extended above 15 million gallons a day by test on model of station site; minimum, 0.71 million gallons a day (1.10 second-feet) June 19.
1927-49): Maximum discharge, 1,940 million gallons a day (3,000 second-feet) Apr. 29, 1937 (gage height, 15.74 feet, datum then in use), from rating curve extended above 22 million gallons a day; minimum, 0.15 million gallons a day (0.23 second-foot) Dec. 18, 1929.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversions.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.9	0.62	1.4	4.8	1.9	23
1.0	1.01	1.5	6.8	2.0	29.5
1.1	1.54	1.6	9.3	2.2	47
1.2	2.3	1.7	12.4		
1.3	3.3	1.8	17.4		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.05	2.05	1.87	1.81	4	11.8	6.8	1.15	1.20	2.3	1.20	1.45
2	4.6	1.90	1.87	1.93	3	2.95	22	1.10	1.15	2.45	1.15	2.15
3	4.4	3.45	1.54	1.81	2.5	2.55	5.3	5.0	1.42	1.84	1.05	2.1
4	4.3	2.8	1.41	1.41	2	2.4	2.95	1.69	1.30	1.55	1.01	1.71
5	5.6	2.8	1.30	2.7	1.8	2.15	2.95	2.95	5.0	3.15	1.01	2.2
6	4.0	13.1	2.25	1.47	1.6	2.6	2.8	1.50	3.4	1.54	1.45	1.35
7	6.7	2.4	4.1	1.54	1.4	2.2	2.35	3.65	1.20	1.41	1.29	1.15
8	4.2	1.80	1.41	1.54	4.5	4.8	7.4	49	1.66	2.4	1.10	1.01
9	6.3	3.45	3.2	1.4	3.5	5.0	18.1	3.45	1.40	1.35	1.42	.92
10	4.3	1.73	1.54	1.3	2.5	6.8	2.55	4.7	1.40	1.20	.92	.83
11	2.9	4.1	1.91	1.7	6	2.7	2.3	3.5	2.9	7.6	1.14	.87
12	2.7	4.4	1.66	2.5	4	7.2	2.85	3.2	1.35	6.3	.87	2.05
13	4.3	2.4	1.35	1.3	3	10.7	1.95	3.6	4.5	1.66	4.3	.92
14	2.45	2.05	1.20	2	2.5	2.95	2.6	4.1	1.35	1.54	3.05	.97
15	8.7	14.4	1.15	3	2.5	3.15	1.87	3.45	2.2	1.60	8.6	.97
16	2.45	44	1.15	5	4.5	5.7	1.66	3.3	1.25	1.47	4.4	.79
17	6.1	4.4	1.15	2	2.75	3.95	2.55	2.05	1.10	1.15	2.05	.75
18	4.2	8.5	1.18	1.3	1.73	5.8	9.3	1.73	1.01	1.10	1.31	.87
19	2.75	3.05	1.85	4	2.25	2.75	19.8	2.15	.97	1.41	1.20	.75
20	2.2	11.0	1.60	3.5	2.45	4.3	3.8	7.7	.92	1.35	1.10	4.5
21	2.1	2.9	2.15	3	3.35	11.3	2.2	1.95	.87	1.35	1.01	5.4
22	1.87	12.5	1.15	4	3.0	11.5	1.87	1.66	2.85	2.05	.97	6.1
23	1.73	12.2	11.2	4	3.45	10.8	2.1	1.66	2.1	1.87	.92	5.2
24	3.25	5.0	2.6	3.5	4.6	51	1.87	1.47	2.15	12.8	.87	2.15
25	2.4	2.65	1.41	4	2.65	5.6	3.35	1.35	3.0	1.90	.83	1.54
26	5.2	2.2	1.25	4.5	2.9	8.0	2.0	1.47	1.70	3.6	.83	1.41
27	4.1	2.05	7.1	6	5.1	5.3	1.66	1.32	2.5	1.73	4.4	1.35
28	3.9	2.1	8.5	7	6.4	8.6	1.41	1.52	9.6	1.66	2.8	2.15
29	2.5	2.4	1.54	10	7.2	4.7	1.35	-	3.3	1.35	1.68	2.25
30	2.3	3.4	1.54	7	8.6	5.0	1.25	-	8.2	1.54	1.25	2.3
31	2.9	2.9	-	3.5	-	2.95	1.15	-	4.4	-	1.25	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	8.7	1.73	3.82	5.91	118	364
August	44	1.73	5.94	9.19	184	565
September	11.2	1.15	2.44	3.78	73.1	224
October	10	1.3	3.22	4.98	99.7	306
November	8.6	1.4	3.52	5.45	106	324
December	51	2.15	7.01	10.8	217	667
Calendar year 1948	70	.65	4.48	6.93	1,640	5,030
January	22	1.15	4.58	7.09	142	436
February	49	1.10	4.33	6.70	121	372
March	9.6	.87	2.50	3.87	77.4	237
April	12.8	1.10	2.47	3.82	74.0	227
May	8.6	.83	1.82	2.82	56.4	173
June	6.1	.75	1.94	3.00	58.2	178
Fiscal year 1948-49	51	.75	3.64	5.63	1,330	4,070

Peak discharge (base, 200 m.g.d.).--Aug. 16 (4 a.m.) 312 m.g.d. (483 sec.-ft.); Dec. 24 (2 p.m.) 205 m.g.d. (317 sec.-ft.).

Note.--No gage-height record Oct. 9 to Nov. 16; discharge computed on basis of records for Oheo Stream.

Makapipi ditch near Nahiku

Location.--Parshall flume, lat. 20°48'20", long. 156°06'25", at entrance to tunnel No. 1, 1.8 miles south of Nahiku and 4.8 miles southeast of Keanae. Altitude of gage, 1,350 feet (from topographic map).

Records available.- July 1948 to June 1949.

Extremes.--Maximum discharge during year, 8.4 million gallons a day (13.0 second-feet) Dec. 24 (gage height, 1.34 feet); minimum, 1.08 million gallons a day (1.67 second-feet) Mar. 12.

Remarks.--Records good except those for period of no gage-height record, which are fair.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	a1.5	4.1	3.05	4.3	4.9	5.0	5.6	1.60	1.50	5.8	3.9	1.81
2	a2.5	4.1	2.8	4.6	4.6	5.3	5.7	1.55	1.45	5.5	3.65	1.70
3	a3	3.9	2.65	4.4	4.3	5.0	6.0	1.50	1.40	4.7	3.4	1.65
4	a4	3.65	2.5	4.1	4.1	4.5	5.9	1.45	1.35	4.4	3.1	1.60
5	a4.5	3.5	2.45	4.1	3.9	4.3	5.3	1.40	1.35	4.1	2.8	1.81
6	a5	3.25	2.25	3.9	3.75	4.1	4.6	1.40	1.30	3.95	2.65	1.81
7	a5	3.2	2.25	3.75	3.5	3.9	4.3	1.30	1.25	3.9	2.5	1.75
8	a5	2.95	2.05	3.55	3.5	3.8	4.1	3.4	1.21	3.75	2.4	1.75
9	a4.5	2.8	2.05	3.25	3.2	5.0	4.3	2.65	1.12	3.55	2.25	1.70
10	a4.5	2.65	2.0	2.95	3.2	5.1	3.9	2.15	1.12	3.4	2.75	1.65
11	a4.5	2.45	1.94	2.75	3.95	5.2	3.65	1.94	1.12	3.25	1.94	2.2
12	a4.5	2.45	1.81	2.6	4.4	5.4	3.4	1.75	1.12	3.65	1.88	2.3
13	a4	2.4	1.75	2.45	4.2	5.5	3.1	1.70	4.4	3.9	1.75	2.0
14	a4	2.3	1.75	2.3	3.95	5.5	2.95	2.05	2.8	3.8	1.70	1.94
15	3.9	2.85	1.70	2.2	3.8	5.6	2.75	2.05	2.45	3.55	1.65	1.88
16	3.75	5.1	1.65	2.05	3.95	5.7	2.6	2.45	2.25	3.5	1.60	1.75
17	3.65	4.6	1.60	2.0	3.8	5.8	2.5	2.25	2.15	3.5	1.55	1.65
18	3.75	4.4	1.60	1.88	3.8	5.8	2.6	2.2	2.0	3.4	1.50	1.60
19	4.1	3.95	1.55	2.0	3.75	5.8	2.65	2.2	1.88	3.25	1.45	1.55
20	4.1	4.3	1.55	2.7	3.55	5.6	2.5	2.15	1.75	3.05	1.40	1.50
21	3.8	4.1	1.55	2.9	3.35	5.9	2.5	2.0	1.70	2.8	1.35	1.50
22	3.65	4.3	1.50	2.5	3.1	6.4	2.45	1.94	1.65	2.65	1.30	1.40
23	3.65	4.8	3.5	2.6	2.95	6.6	2.3	1.81	1.75	2.9	1.25	1.45
24	3.65	4.6	2.3	2.6	2.9	7.0	2.2	1.75	1.81	5.6	1.25	1.40
25	3.55	4.4	2.05	3.05	3.3	7.2	2.15	1.70	2.35	5.2	1.17	1.35
26	3.65	4.2	1.94	3.5	4.8	6.6	2.0	1.65	3.05	5.9	1.17	1.35
27	3.75	3.95	2.75	4.1	4.3	6.5	1.94	1.60	2.75	4.7	1.55	1.25
28	4.5	3.75	3.65	5.4	5.0	6.2	1.88	1.50	4.6	4.5	1.55	1.25
29	4.3	3.4	3.1	5.9	4.9	6.0	1.75	-	5.2	4.2	1.88	1.21
30	4.2	3.25	3.5	5.9	4.9	5.8	1.70	-	6.3	4.1	1.88	1.12
31	4.1	3.1	-	5.3	-	5.6	1.65	-	6.4	-	1.88	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	5	1.5	3.95	6.11	123	376
August	5.1	2.3	3.64	5.63	113	346
September	3.65	1.50	2.23	3.45	66.8	205
October	5.9	1.88	3.41	5.28	106	324
November	5.0	2.9	3.92	6.07	118	361
December	7.2	3.8	5.54	8.57	172	527
The period	-	-	-	-		2,140
January	6.0	1.65	3.26	5.04	101	310
February	3.4	1.30	1.90	2.94	53.1	163
March	6.4	1.12	2.34	3.62	72.5	223
April	5.9	2.65	4.02	6.22	120	370
May	3.9	1.17	2.00	3.09	62.0	190
June	2.3	1.12	1.63	2.52	48.9	150
Fiscal year 1948-49	7.2	1.12	3.16	4.89	1,160	3,540

a No gage-height record; discharge computed on basis of records for nearby ditches and recorded range in stage.

Hanawi Stream near Nahiku

Location.--Lat. 20°48'35", long. 156°06'50", 200 feet upstream from Koolau ditch intake and trail, 1¾ miles southwest of Nahiku, and 4½ miles southeast of Keanae.

Drainage area.--0.8 square mile.

Records available.--January 1914 to January 1916, November 1921 to June 1949.

Average discharge.--27 years (1922-49), 13.5 million gallons a day (20.9 second-feet).

Extremes.--Maximum discharge during year, 1,950 million gallons a day (3,020 second-feet) Aug. 16 (gage height, 8.67 feet), from rating curve extended above 260 million gallons a day by test on model of station site; minimum, 1.77 million gallons a day (2.74 second-feet) Mar. 7.
1914-16, 1921-49: Maximum discharge, about 3,600 million gallons a day (5,570 second-feet) Jan. 18, 1916 (gage height, 11.6 feet at site of present gage), by test on model of station site; minimum, 1.1 million gallons a day (1.7 second-feet) Feb. 19, 20, 1944.

Remarks.--Records good. No diversions above station. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 1045: 1922-43(M).

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.3	2.1	1.3	14.3	3.0	85
.5	3.4	1.6	21	3.5	125
.7	5.2	2.0	33	4.0	176
1.0	8.9	2.5	54	4.5	250

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.65	6.2	3.7	34.5	17.5	170	20	2.75	2.1	19.8	4.2	2.9
2	5.2	4.6	5.3	9.6	6.1	19.5	55	2.7	1.99	20.5	4.0	3.5
3	7.4	3.9	3.7	7.8	5.0	9.9	23	2.9	1.99	7.0	3.65	4.8
4	15.1	3.65	3.2	4.6	4.1	8.0	10.5	2.7	1.94	4.2	3.4	4.0
5	33	3.35	2.9	5.0	3.8	5.5	8.6	2.5	1.88	11.6	3.55	5.3
6	45	5.4	2.85	3.55	3.4	7.5	7.9	2.45	1.82	4.6	4.8	3.25
7	33.5	3.95	3.05	3.25	3.25	5.2	7.4	2.6	1.82	5.2	3.55	2.85
8	13.5	3.25	2.75	2.9	32	29.5	16.4	88	1.99	5.5	3.1	2.7
9	5.9	3.1	3.3	2.7	14.8	98	17.8	7.1	2.6	3.7	3.05	2.5
10	5.2	3.05	3.35	2.7	5.8	100	8.7	3.4	2.1	3.25	2.9	2.4
11	17.5	3.7	3.7	5.5	53	21.5	10.2	3.05	2.35	13.1	3.0	15.2
12	5.6	3.8	3.9	4.4	19.3	108	7.1	3.0	9.2	18.2	2.85	6.6
13	4.3	3.9	3.05	4.6	7.1	99	6.2	4.0	105	5.4	3.0	2.9
14	3.8	3.2	2.65	3.4	7.3	45	5.8	17.3	8.8	4.2	2.7	2.5
15	3.7	53	2.5	2.7	6.5	29	5.4	11.6	5.4	5.8	2.75	2.4
16	3.4	262	2.4	2.5	30.5	54	5.6	20	3.65	11.4	2.75	2.3
17	38	7.7	2.4	2.7	7.4	27	45	4.3	2.9	5.0	2.6	2.15
18	43	5.0	2.35	2.45	5.8	35.5	19.7	3.4	2.5	4.0	2.45	2.2
19	11.4	4.2	3.15	4.4	5.1	19.2	7.8	3.05	2.35	3.8	2.4	2.1
20	5.8	9.4	2.35	26	4.5	28	5.5	2.85	2.2	3.55	2.4	1.99
21	5.6	4.3	2.5	9.7	4.2	61	4.9	2.7	2.1	3.65	2.35	1.99
22	5.6	18.2	2.35	13.7	4.2	111	4.5	2.6	8.8	7.2	2.3	2.35
23	4.0	17.9	47	13.8	5.2	145	4.1	2.5	24	24	2.2	6.2
24	7.0	5.3	4.8	8.0	6.7	320	3.95	2.4	19.8	90	2.2	3.15
25	5.2	4.2	3.05	17.2	54	63	3.7	2.3	35	18.1	2.4	2.2
26	5.8	3.7	2.7	25.5	23.5	40	3.5	2.2	24.5	47	2.45	1.99
27	16.2	3.5	105	58	88	21.5	3.4	2.2	11.4	10.4	9.9	1.94
28	22.5	3.4	41	112	77	48	3.35	2.1	35.5	7.9	5.9	1.94
29	8.1	3.5	4.8	102	56	106	3.05	-	33	5.3	7.0	1.88
30	7.0	5.2	81	34.5	50	80	3.0	-	69	5.0	3.55	1.94
31	12.4	6.6	-	11.5	-	31	2.9	-	45	-	3.1	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	45	3.4	13.0	20.1	403	1,240
August	262	3.05	15.2	23.5	472	1,450
September	105	2.35	11.9	18.4	357	1,090
October	112	2.45	17.5	27.1	541	1,660
November	88	3.25	20.4	31.6	611	1,880
December	320	5.2	62.8	97.2	1,950	5,970
Calendar year 1948	1,040	2.35	26.6	41.2	9,750	29,920
January	55	2.9	10.8	16.7	334	1,020
February	88	2.1	7.45	11.5	209	640
March	105	1.82	15.2	23.5	473	1,450
April	90	3.25	12.6	19.5	378	1,160
May	9.9	2.2	3.43	5.31	106	327
June	15.2	1.88	3.34	5.17	100	307
Fiscal year 1948-49	320	1.82	16.2	25.1	5,930	18,190

Peak discharge (base, 850 m.g.d.).--Aug. 16 (8:30 a.m.) 1,950 m.g.d. (3,020 sec.-ft); Sept. 27 (10 p.m.) 1,190 m.g.d. (1,840 sec.-ft.); Dec. 1 (1:30 a.m.) 1,100 m.g.d. (1,700 sec.-ft.); Dec. 24 (10 a.m.) 1,050 m.g.d. (1,620 sec.-ft.).

Kapaula Stream near Nahiku

Location.--Lat. 20°48'50", long. 156°07'05", 40 feet upstream from intake to Koolau ditch, 300 feet upstream from ditch trail, 1¾ miles southwest of Nahiku, and 4 miles southeast of Keanae.

Records available.--November 1921 to June 1949.

Average discharge.--27 years (1922-49), 10.8 million gallons a day (16.7 second-feet).

Extremes.--Maximum discharge during year, 564 million gallons a day (873 second-feet) Dec. 24 (gage height, 4.93 feet), from rating curve extended above 220 million gallons a day by logarithmic plotting; minimum, 0.95 million gallons a day (1.47 second-feet) Mar. 6, 7, June 21.

1921-49: Maximum discharge, 1,780 million gallons a day (2,750 second-feet) Apr. 6, 1938 (gage height, 8.40 feet), from rating curve extended above 220 million gallons a day by logarithmic plotting; minimum, 0.2 million gallons a day (0.3 second-foot) Nov. 23-25, 1933, Oct. 2-5, 1938.

Remarks.--Records good. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Nov. 13-15, Jan. 3-17)

0.5	1.20	1.2	10.0	2.4	60
.6	2.35	1.4	12.8	2.8	101
.7	3.8	1.6	17.0	3.2	156
.8	5.2	1.8	23.5	3.4	193
1.0	7.6	2.0	33		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.5	6.2	3.6	29.5	15	74	14.6	1.84	1.11	16.8	2.8	1.72
2	4.8	3.95	6.1	9.3	6.1	12.9	29	1.72	1.11	15.4	2.5	2.35
3	6.8	3.1	3.5	6.7	4.6	7.7	19.3	1.96	1.11	6.5	2.2	3.8
4	11.2	2.65	2.35	3.8	3.5	6.4	5.4	1.72	1.03	3.95	2.1	3.35
5	30.5	2.2	2.1	4.2	3.1	4.8	4.1	1.60	1.03	10.0	2.5	5.3
6	36.5	4.4	1.72	2.8	2.5	6.3	3.5	1.49	1.03	4.9	3.95	2.95
7	27.5	3.45	2.1	2.2	2.35	4.2	3.2	1.44	.95	5.2	2.65	1.96
8	13.8	2.35	1.84	1.96	19.7	17.4	7.2	47	1.65	5.1	2.1	1.60
9	5.0	1.96	2.45	1.72	11.9	53	13.6	7.2	2.5	3.1	1.84	1.39
10	3.8	1.84	2.8	1.60	6.2	58	6.4	3.2	1.49	2.2	1.72	1.29
11	15.4	2.45	3.9	4.7	29	16.9	8.6	2.35	1.60	9.1	1.72	12.7
12	5.3	3.1	4.2	4.9	13.6	67	5.0	2.1	10.5	17.0	1.60	8.5
13	3.65	3.2	2.5	4.7	5.7	56	3.5	3.35	85	4.9	1.72	2.65
14	2.95	2.35	1.96	3.1	5.5	29.5	2.95	12.2	9.0	3.35	1.60	1.72
15	2.65	34.5	1.72	2.1	4.3	21.5	2.5	9.8	5.7	3.75	1.72	1.39
16	2.5	92	1.49	1.72	22	36	4.1	15.6	3.35	10.7	1.60	1.29
17	31	7.5	1.39	1.96	6.6	19.0	32.5	4.8	2.1	4.4	1.49	1.20
18	33.5	3.8	1.29	1.72	4.5	25.5	15.3	2.95	1.60	2.8	1.39	1.20
19	13.7	2.95	2.9	4.0	3.35	14.6	7.5	2.35	1.29	2.35	1.29	1.11
20	5.6	9.6	1.60	21	2.8	19.2	4.9	1.96	1.20	2.1	1.29	1.03
21	5.1	4.3	1.60	11.7	2.35	42	4.1	1.72	1.11	2.1	1.20	1.03
22	4.4	15.5	1.39	14.2	2.35	66	3.5	1.72	10.0	5.8	1.20	1.63
23	3.35	18.8	36	16	3.95	100	3.2	1.60	20.5	18.6	1.11	6.1
24	6.3	6.4	6.8	8.7	5.4	178	2.95	1.39	17.4	67	1.11	3.5
25	4.8	3.35	2.65	14.6	21.5	32	2.8	1.29	27.5	13.0	1.49	1.72
26	5.8	2.65	1.96	20.5	25.5	24.5	2.5	1.29	16.7	35	1.88	1.29
27	13.6	2.35	50	43	44	15.4	2.65	1.20	10.3	9.6	11.1	1.11
28	18.2	2.2	23	67	52	30.5	2.65	1.20	26	6.6	6.5	1.11
29	7.3	2.65	4.4	63	36	64	2.35	-	25.5	3.8	7.4	1.03
30	6.3	4.9	54	25	12.2	48	2.1	-	49	3.65	3.1	1.03
31	10.2	9.1	-	10.8	-	22	1.96	-	27	-	2.1	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	36.5	2.5	11.1	17.2	345	1,060
August	92	1.84	8.57	13.3	266	816
September	54	1.29	7.78	12.0	233	716
October	67	1.60	13.2	20.4	408	1,250
November	52	2.35	12.6	19.5	378	1,160
December	178	4.2	37.8	58.5	1,170	3,600
Calendar year 1948	462	1.29	16.8	26.0	6,160	18,890
January	32.5	1.96	7.22	11.2	224	687
February	47	1.20	4.93	7.63	138	424
March	85	.95	11.8	18.3	365	1,120
April	67	2.1	9.96	15.4	299	917
May	11.1	1.11	2.52	3.90	78.0	239
June	12.7	1.03	2.60	4.02	78.0	240
Fiscal year 1948-49	178	.95	10.9	16.9	3,980	12,230

Peak discharge (base, 450 m.g.d.).--Nov. 27 (11:30 p.m.) 504 m.g.d. (780 sec.-ft.); Dec. 24 (10:30 a.m.) 564 m.g.d. (873 sec.-ft.).

Koolau ditch at Nahiku weir, near Nahiku

Location.--Sharp-crested weir, lat. 20°48'55", long. 156°07'15", between Kapaula and Waiohue Streams, $1\frac{3}{4}$ miles (corrected) southwest of Nahiku, and $3\frac{3}{4}$ miles (corrected) southeast of Keanae. Datum of gage is 1,289.14 feet above mean sea level.

Records available.--February 1919 to June 1949.

Average discharge.--30 years, 21.8 million gallons a day (33.7 second-feet).

Extremes.--Maximum discharge during year, 58 million gallons a day (89.7 second-feet) Sept. 27 (gage height, 1.65 feet); no flow parts of some days.
1919-49: Maximum discharge, 63 million gallons a day (98 second-feet) Jan. 22, 1946 (gage height, 1.76 feet); no flow at times.

Remarks.--Records excellent. Ditch diverts water from nearly all streams from the Makapipi west to the Alo. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.6	27.5	16.4	50	45	42	50	10.8	7.9	42	h15.0	11.4
2	19.2	21	20.5	40	28.5	40	50	10.4	7.6	42	h15.0	12.3
3	27	18.1	16.0	33.5	23.5	38	50	10.8	7.3	30	15.0	15.0
4	31	16.7	13.6	23	19.2	33.5	45	10.4	7.1	20.5	13.6	13.6
5	48	15.0	12.7	22	17.8	25.5	38	9.5	6.8	32	14.3	19.6
6	46	21.5	11.7	17.8	16.0	29	33.5	9.2	6.6	21.5	17.5	13.6
7	50	17.0	12.7	16.0	14.6	22.5	31	9.5	6.3	22	14.0	11.1
8	46	14.3	11.4	14.3	36	38	32.5	47	7.1	22	12.3	10.1
9	30	13.3	12.7	13.0	34.5	50	42	28	8.4	16.7	11.4	9.2
10	23.5	12.3	12.7	12.7	22	50	33.5	15.3	7.1	14.6	10.8	8.6
11	38	14.3	14.3	19.0	37	50	38	13.0	7.3	28.5	10.8	21
12	28	15.0	14.6	17.0	45	50	30.5	11.7	11.7	42	10.1	25
13	22	14.6	11.7	17.4	31	50	25.5	14.3	50	24	10.8	12.7
14	18.4	12.7	10.8	14.0	28.5	50	23.5	23.5	33.5	19.2	9.8	10.4
15	14.4	25.5	10.1	11.7	24	50	22	32.5	22	21	9.8	9.2
16	16.0	50	9.8	10.8	45	50	23.5	38	15.3	33.5	9.8	8.6
17	42	36.5	9.5	11.4	31	48	37	19.5	12.3	19.9	8.9	8.1
18	52	21.5	9.2	10.4	24.5	50	38	14.6	10.8	16.4	8.6	7.9
19	42	20.5	11.4	17.1	21	48	33.5	13.0	9.5	15.3	8.4	7.6
20	27	34.5	9.2	26.5	18.8	48	23.5	12.0	8.9	14.0	8.4	7.1
21	25	21.5	9.2	33	17.0	50	20.5	11.4	8.4	14.0	8.1	6.8
22	19.6	38	8.9	35.5	16.7	47	18.4	10.4	19.8	23	7.9	8.2
23	19.9	45	41	38	19.2	52	17.0	10.1	39	38	7.6	19.0
24	29	27	15.3	28	24.5	55	16.0	9.5	38	50	7.3	11.4
25	23.5	21	13.6	31	29.5	52	14.6	8.9	29	40	8.1	8.1
26	26	18.4	11.7	45	48	52	14.0	8.6	38	48	8.9	7.3
27	42	17.0	33.5	50	40	50	13.3	8.6	35.5	h40	32.5	7.1
28	45	16.0	43	50	50	52	13.0	8.4	45	h27	23.5	6.8
29	35.5	16.4	22.5	50	38	48	12.3	-	45	h23	29	6.6
30	30.5	19.8	35.5	48	41	50	11.7	-	48	h16.0	16.0	6.6
31	36.5	25	-	42	-	50	11.1	-	48	-	12.7	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	52	14.4	31.2	48.3	968	2,970
August	50	12.3	22.2	34.3	687	2,110
September	43	8.9	16.2	25.1	485	1,490
October	50	10.4	27.4	42.4	848	2,600
November	50	14.6	29.6	45.8	887	2,720
December	55	22.5	45.8	70.9	1,420	4,360
Calendar year 1948	55	0	27.7	42.9	10,130	31,070
January	50	11.1	27.8	43.0	862	2,650
February	47	8.4	15.3	23.7	429	1,320
March	50	6.3	20.9	32.3	647	1,990
April	50	14.0	27.2	42.1	816	2,500
May	32.5	7.3	12.8	19.8	396	1,210
June	25	6.6	11.0	17.0	330	1,010
Fiscal year 1948-49	55	6.3	24.0	37.1	8,780	26,930

h Computed from staff-gage reading.

Waiohue Stream near Nahiku

Location.--Lat. 20°49'05", long. 156°07'40", 200 feet upstream from intake to Koolau ditch, 300 feet upstream from ditch trail, 2¼ miles southwest of Nahiku, and 3½ miles southeast of Keanae.

Drainage area.--1.5 square miles.

Records available.--October 1921 to June 1949.

Average discharge.--27 years (1922-49), 7.88 million gallons a day (12.2 second-feet).

Extremes.--Maximum discharge during year, 450 million gallons a day (696 second-feet) Sept. 27 (gage height, 4.92 feet), from rating curve extended above 50 million gallons a day by logarithmic plotting; minimum, 1.87 million gallons a day (2.89 second-feet) June 21, 29.

1921-49: Maximum discharge, 760 million gallons a day (1,180 second-feet) Apr. 7, 1938 (gage height, 6.24 feet), from rating curve extended above 50 million gallons a day by logarithmic plotting; minimum, 1.37 million gallons a day (2.12 second-feet) Feb. 21, 1944, June 2, 1945.

Remarks.--Records good. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used June 12-22)

0.6	2.05	1.0	6.6	1.6	24
.7	2.85	1.1	8.4	1.8	33.5
.8	3.8	1.2	10.6	2.0	45
.9	5.1	1.4	16.3	2.5	84

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	4.4	3.6	16.1	8.9	30.5	12.1	2.7	2.3	8.9	3.5	2.75
2	4.7	3.8	4.4	6.0	4.8	8.2	17.8	2.7	2.3	8.4	3.3	3.15
3	5.2	3.6	3.5	5.6	4.4	6.0	11.2	2.75	2.3	5.2	3.25	3.25
4	6.7	3.5	3.15	3.8	3.8	5.2	7.0	2.7	2.2	3.7	3.15	3.05
5	13.9	3.3	3.05	3.8	3.8	4.6	6.0	2.6	2.2	6.4	3.25	5.3
6	15.5	5.1	2.95	3.3	3.6	5.4	5.6	2.55	2.2	3.7	4.3	3.15
7	15.1	3.7	3.15	3.15	3.5	4.3	5.1	2.55	2.2	4.2	3.3	2.7
8	7.6	3.3	2.85	3.05	11.9	11.1	8.2	25.5	2.3	4.4	3.05	2.6
9	4.2	3.25	3.15	2.85	7.8	24	9.2	4.3	2.35	3.6	a2.95	2.45
10	3.6	3.15	3.15	2.85	4.7	26	6.4	3.05	2.3	3.3	a2.85	2.35
11	10.7	3.5	3.3	3.9	15.8	10.3	7.8	2.85	2.55	8.2	a2.75	7.5
12	4.1	3.5	3.4	3.6	9.8	30.5	5.4	2.75	5.6	11.3	a2.7	4.3
13	3.95	3.5	3.05	3.5	4.8	24.5	4.6	3.3	49	4.2	2.95	2.45
14	3.5	3.05	2.85	3.15	5.0	15.3	4.1	7.0	5.2	3.7	2.7	2.3
15	3.6	17.4	2.75	2.85	4.6	12.2	3.8	5.7	3.8	3.9	2.75	2.15
16	3.5	63	2.7	2.75	12.2	18.3	4.7	7.9	3.05	7.0	2.7	2.05
17	15.5	5.0	2.7	3.05	6.1	11.3	16.3	3.5	2.7	3.8	2.6	2.05
18	15.6	4.1	2.6	2.85	4.4	13.8	9.4	3.05	2.55	3.5	2.55	2.05
19	7.2	3.7	3.2	4.2	3.8	9.4	5.5	2.85	2.45	3.3	2.45	1.99
20	4.6	7.3	2.6	13.0	3.5	13.3	4.2	2.7	2.3	3.15	2.45	1.93
21	4.7	3.95	2.6	6.4	3.3	24	3.7	2.6	2.3	3.5	2.35	1.87
22	4.3	9.6	2.55	8.1	3.35	33	3.4	2.6	4.7	5.7	2.3	2.5
23	3.8	10.4	19.9	8.5	3.95	33	3.3	2.55	9.9	13.6	2.3	4.4
24	5.9	4.4	3.7	4.9	5.2	84	3.25	2.45	8.1	31.5	2.2	3.0
25	4.8	3.7	2.95	8.6	16.7	17.7	3.15	2.45	12.5	8.2	2.7	2.15
26	5.3	3.5	2.75	11.5	11.8	14.4	3.05	2.45	7.9	17.8	3.0	1.99
27	8.4	3.4	39.5	21	23.5	10.8	3.05	2.45	6.9	6.2	11.4	1.93
28	9.5	3.5	11.7	28	19.7	18.1	2.95	2.35	15.2	5.3	6.1	1.93
29	5.6	3.6	3.7	26.5	16.2	29	2.85	-	13.7	3.95	7.0	1.93
30	4.7	4.2	25	12.1	8.0	24	2.85	-	23.5	3.8	3.3	1.93
31	7.3	5.0	-	7.1	-	13.4	2.75	-	14.5	-	2.85	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	15.6	3.5	7.00	10.8	217	665
August	63	3.05	6.66	10.3	206	633
September	39.5	2.55	5.88	9.10	176	542
October	28	2.75	7.61	11.8	236	724
November	23.5	3.3	7.96	12.3	239	733
December	84	4.3	18.9	29.2	586	1,800
Calendar year 1948	210	2.3	9.97	15.4	3,650	11,200
January	17.8	2.75	6.09	9.42	189	579
February	25.5	2.35	4.03	6.24	113	346
March	49	2.2	7.13	11.0	221	678
April	31.5	3.15	6.78	10.5	203	624
May	11.4	2.2	3.39	5.25	105	322
June	7.5	1.87	2.77	4.29	83.2	255
Fiscal year 1948-49	84	1.87	7.05	10.9	2,570	7,900

Peak discharge (base, 300 m.g.d.).--Aug. 16 (9 a.m.) 390 m.g.d. (603 sec.-ft.); Sept. 27 (10 p.m.) 450 m.g.d. (696 sec.-ft.).

a No gage-height record; discharge computed on basis of recorded range in stage and records for West Kopiliula and Kapaula Streams.

West Kopiliula Stream near Keanae

Location.--Lat. 20°49'10", long. 156°08'15", 600 feet upstream from Koolau ditch crossing and highway bridge and 3 miles southeast of Keanae post office. Datum of gage is 1,292.30 feet above mean sea level.

Drainage area.--3.9 square miles.

Records available.--January 1914 to September 1917, October 1921 to June 1949.

Average discharge.--25 years (1922-34, 1936-49), 18.3 million gallons a day (28.3 second-feet).

Extremes.--Maximum discharge during year, 1,830 million gallons a day (2,830 second-feet) Aug. 16 (gage height, 6.37 feet), from rating curve extended above 75 million gallons a day by logarithmic plotting; minimum, 0.92 million gallons a day (1.42 second-feet) Mar. 7, 8.

1914-17, 1921-49: Maximum discharge, 5,050 million gallons a day (7,810 second-feet) Jan. 26, 1948 (gage height, about 9.50 feet), from rating curve extended above 75 million gallons a day by logarithmic plotting; minimum, 0.6 million gallons a day (0.9 second-foot) Sept. 15-17, 1917.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversions above station. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 755: 1931-32.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	8.1	3.55	32.5	22	65	18.3	2.3	1.34	26	4.2	2.2
2	4.7	7.6	6.1	13.1	11.4	25	29.5	2.2	1.34	23	4.0	2.9
3	6.1	5.9	3.3	10.2	8.1	10	20	2.6	1.25	10	3.5	5.0
4	12.3	4.4	2.7	5.7	5.7	7.5	10.4	2.2	1.16	5.0	4.8	4.0
5	28	3.45	2.45	5.5	5.1	5.8	8.4	2.05	1.07	12	4.0	5.5
6	33	7.0	2.35	3.7	4.2	9.0	7.3	1.95	.99	5.2	5.0	2.6
7	29.5	4.2	2.7	3.25	3.7	5.2	6.0	2.0	.99	6.0	3.3	1.9
8	15.1	3.05	2.2	2.7	26	18	12	51	2.1	5.8	2.8	1.7
9	7.0	2.8	3.3	2.45	17.6	72	20	9.4	2.5	3.9	2.6	1.52
10	5.2	2.7	2.8	2.6	10.6	70	10	3.75	1.73	3.4	2.5	1.34
11	16.0	3.8	3.55	8.2	40	29	12	2.85	2.0	14	2.4	9.2
12	6.6	3.6	4.6	6.4	17.0	80	8.5	2.45	7.2	19	2.2	7.6
13	4.7	3.7	2.95	5.9	8.9	82	6.5	3.55	95	5.0	2.4	2.05
14	3.6	2.6	2.2	4.0	8.7	50	5.5	12.2	13.1	4.0	2.2	1.62
15	3.45	39.5	2.1	2.85	6.6	35	5.0	10.6	8.0	7.5	2.2	1.43
16	3.05	195	2.0	2.6	24	50	6.5	13.7	4.6	12	2.2	1.43
17	35	10.5	1.92	2.75	10	25	60	4.3	3.0	5.0	1.9	1.34
18	37.5	5.2	1.92	2.45	7.0	30	18	3.15	2.3	3.7	1.7	1.43
19	16.2	3.9	2.7	5.2	5.2	18	9.6	2.6	1.95	3.4	1.6	1.25
20	8.0	9.3	1.92	20	4.3	27	6.2	2.3	1.62	3.0	1.52	1.07
21	6.3	3.75	2.3	15.1	3.8	50	4.9	2.2	1.43	3.5	1.43	1.07
22	5.0	14.4	1.84	18.2	3.5	90	4.2	1.95	10.5	9.0	1.43	1.86
23	3.9	15.8	31.5	19.5	5.8	110	3.7	1.84	21.5	28	1.4	7.2
24	7.6	5.6	6.1	13.3	7.0	220	3.4	1.62	17.8	80	1.3	3.45
25	5.7	3.9	2.8	17.6	27	70	3.15	1.52	29.5	18	2.3	1.62
26	7.3	3.2	2.2	23.5	25	40	2.85	1.52	18.4	40	2.5	1.34
27	14.4	2.95	102	54	55	22	3.2	1.62	11.5	13	17	1.25
28	18.7	2.95	36.5	81	70	40	3.85	1.52	25	9.0	7.0	1.25
29	10.0	3.3	6.9	80	50	80	2.6	-	26.5	5.6	7.8	1.16
30	8.6	5.3	52	33	15	71	2.45	-	52	5.4	3.0	1.25
31	13.3	8.6	-	16.9	-	32	2.45	-	40	-	2.3	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	37.5	3.05	12.2	18.9	379	1,160
August	195	2.6	12.8	19.8	396	1,220
September	102	1.84	10.0	15.5	301	925
October	81	2.45	16.6	25.7	514	1,580
November	70	3.5	16.9	26.1	508	1,560
December	220	5.2	49.6	76.7	1,540	4,720
Calendar year 1948	1,100	1.84	22.1	34.2	8,100	24,840
January	60	2.45	10.2	15.8	316	971
February	51	1.52	5.39	8.34	151	463
March	95	.99	13.1	20.3	407	1,250
April	80	3.0	12.9	20.0	388	1,190
May	17	1.3	3.37	5.21	104	321
June	9.2	1.07	2.62	4.05	78.5	241
Fiscal year 1948-49	220	.99	13.9	21.5	5,080	15,600

Peak discharge (base, 1,000 m.g.d.).--Aug. 16 (9:30 a.m.) 1,830 m.g.d. (2,830 sec.-ft.); Sept. 27 (10 p.m.) 1,360 m.g.d. (2,100 sec.-ft.).

Note.--No gage-height record Nov. 17 to Dec. 29, Jan. 7-18, Mar. 31 to May 19, May 23 to June 8; discharge computed on basis of records for East and West Wailuanui and East and West Wailuaiki Streams.

East Wailuaiki Stream near Keanae

Location.--Lat. 20°49'05", long. 156°08'25", 1,000 feet upstream from Koolau ditch crossing and trail and 3 miles southeast of Keanae.

Drainage area.--3.7 square miles.

Records available.--December 1913 to October 1917, July 1922 to June 1949.

Average discharge.--27 years (1922-49), 19.7 million gallons a day (30.5 second-feet).

Extremes.--Maximum discharge during year, 1,760 million gallons a day (2,720 second-feet) Sept. 27 (gage height, 7.81 feet), from rating curve extended above 310 million gallons a day by logarithmic plotting; minimum, 1.7 million gallons a day (2.6 second-feet) June 21.

1913-17, 1922-49: Maximum discharge, 3,060 million gallons a day (4,730 second-feet) Apr. 6, 1938 (gage height, 9.26 feet), from rating curve extended above 310 million gallons a day by logarithmic plotting; minimum, 1.0 million gallons a day (1.6 second-feet) Oct. 22, 23, 1917, Aug. 1, 2, 1922.

Remarks.--Records good. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Apr. 25 to June 30)

0.6	1.9	1.2	7.3	2.8	72
.7	2.5	1.4	11.0	3.2	105
.8	3.2	1.7	18.5	3.6	151
.9	4.0	2.0	28.5	4.0	213
1.0	4.9	2.4	46	4.5	310

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.0	9.2	4.6	57	24.5	122	29	3.6	2.2	33.5	5.7	2.9
2	7.6	7.8	9.1	17.4	13.8	26	48	3.4	2.1	30	5.6	4.2
3	10.4	7.3	4.5	12.8	9.4	13.8	32	3.8	2.1	13.6	4.7	7.9
4	23	5.3	3.8	6.6	6.9	9.4	13.7	3.1	2.0	6.6	7.5	5.2
5	55	4.6	3.5	6.3	6.2	7.3	10.8	3.0	2.0	18.5	6.1	9.1
6	69	11.3	3.4	4.6	5.3	10.5	9.4	2.8	1.8	6.7	8.1	3.4
7	55	5.6	3.9	4.3	4.9	6.5	8.3	3.0	1.8	8.1	4.4	2.8
8	23	4.2	3.3	3.8	37	23.5	15.0	75	3.5	7.7	3.8	2.6
9	8.4	4.0	5.5	3.5	24.5	98	28	11.1	4.3	5.0	3.6	2.4
10	6.5	3.6	4.3	3.8	11.6	96	12.4	4.5	2.6	4.4	3.5	3.0
11	33	5.4	6.4	11.5	50	36	15.7	3.7	3.1	19.7	3.5	16.8
12	8.8	5.3	6.6	7.8	23	119	10.2	3.4	17.9	31	3.1	10.0
13	6.0	5.3	3.8	7.8	9.4	120	8.0	5.0	171	6.5	3.5	3.0
14	5.1	3.5	3.2	4.5	9.9	60	7.0	19.8	16.4	5.0	3.1	2.6
15	5.1	68	3.1	3.5	7.3	43	6.3	14.1	9.4	9.5	3.1	2.3
16	4.6	154	2.9	3.2	33	64	8.2	22.5	4.9	19.4	3.1	2.1
17	64	13.7	2.8	3.6	11.4	32	88	5.1	3.4	6.1	2.8	2.0
18	66	6.6	2.7	3.2	8.3	38.5	23	3.8	2.9	4.7	2.6	2.1
19	27	5.2	4.2	8.4	6.2	23	11.6	3.4	2.5	4.4	2.5	2.0
20	10.0	14.8	2.9	41	5.3	35	7.6	3.2	2.3	3.8	2.4	1.8
21	8.5	5.2	3.8	21	4.9	70	6.3	3.0	2.1	4.5	2.4	1.7
22	6.8	25.5	2.9	27.5	4.7	113	5.6	2.8	15.1	11.7	2.3	3.3
23	5.5	27.5	64	26	7.2	136	5.2	2.7	31	37	2.2	13.3
24	13.2	6.9	7.0	17.7	9.2	324	4.9	2.5	22.5	124	2.1	5.8
25	8.2	5.3	3.8	27	35	82	4.6	2.4	35.5	27.5	3.1	2.3
26	11.3	4.6	3.1	37.5	31.5	47	4.4	2.4	30	64	3.5	2.0
27	25.5	4.4	145	83	74	28.5	4.8	2.6	15.4	18.1	26	2.0
28	35.5	4.4	49	128	92	52	4.6	2.5	42	12.8	9.7	2.0
29	13.5	4.8	8.0	120	63	114	3.9	-	54	7.5	11.6	1.9
30	10.0	8.0	109	48	18.9	98	3.8	-	85	7.3	3.6	2.0
31	21	10.9	-	22.5	-	50	3.8	-	50	-	2.9	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	69	4.6	21.0	32.5	652	2,000
August	154	3.5	14.6	22.6	452	1,390
September	145	2.7	16.0	24.8	480	1,470
October	128	3.2	24.9	38.5	773	2,370
November	92	4.7	21.6	33.4	648	1,990
December	324	6.5	67.7	105	2,100	6,440
Calendar year 1948	925	2.5	31.2	48.3	11,420	35,060
January	88	3.8	14.3	22.1	444	1,360
February	75	2.4	7.79	12.1	218	670
March	171	1.8	20.7	32.0	641	1,970
April	124	3.8	18.6	28.8	559	1,710
May	26	2.1	4.91	7.60	152	467
June	16.8	1.7	4.15	6.42	124	382
Fiscal year 1948-49	324	1.7	19.8	30.6	7,240	22,220

Peak discharge (base, 600 m.g.d.).--Aug. 16 (10 a.m.) 930 m.g.d. (1,440 sec.-ft.); Sept. 27 (9:30 p.m.) 1,760 m.g.d. (2,720 sec.-ft.); Sept. 30 (11 p.m.) 680 m.g.d. (1,050 sec.-ft.); Dec. 24 (11 a.m.) 680 m.g.d. (1,050 sec.-ft.).

West Wailuaiki Stream near Keanae

Location.--Lat. 20°49'20", long. 156°08'35", 500 feet upstream from Koolau ditch crossing and trail bridge and 2¼ miles south of Keanae.

Drainage area.--3.6 square miles.

Records available.--January 1914 to October 1917, November 1921 to June 1949.

Average discharge.--27 years (1922-49), 24.9 million gallons a day (38.5 second-feet).

Extremes.--Maximum discharge during year, 2,260 million gallons a day (3,500 second-feet) Sept. 27 (gage height, 9.70 feet), from rating curve extended above 420 million gallons a day by logarithmic plotting; minimum, 1.72 million gallons a day (2.66 second-feet) Mar. 8.

1914-17, 1921-49: Maximum discharge, 4,500 million gallons a day (6,960 second-feet) Jan. 14, 1923 (gage height, about 13.5 feet, from floodmarks), from rating curve extended above 420 million gallons a day by logarithmic plotting; minimum, 0.3 million gallons a day (0.5 second-foot) July 26, 1922.

Remarks.--Records good except those for periods of no gage-height record, which are fair. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.5	1.8	1.1	7.7	2.6	81
.6	2.4	1.2	9.5	3.0	121
.7	3.0	1.4	14.0	3.5	185
.8	3.9	1.6	21	4.0	270
.9	4.9	1.8	29.5	4.5	375
1.0	6.2	2.2	51		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.4	12.0	5.5	76	42	a145	31	3.25	2.2	40	5.9	2.9
2	7.2	13.0	8.6	20.5	17.3	a33	48	3.1	2.15	35.5	5.8	3.8
3	9.2	9.6	5.0	13.8	12.0	a18	39.5	3.3	2.1	15.7	5.0	6.6
4	21	7.0	4.4	8.4	9.0	a12	16.0	2.95	2.05	8.8	10.7	4.6
5	60	5.7	4.0	7.4	8.1	9.1	12.2	2.95	1.92	18.1	6.9	6.5
6	79	10.9	3.8	5.7	6.6	11.2	10.3	2.7	1.80	8.6	7.2	3.45
7	65	6.4	4.2	5.2	6.1	7.9	9.1	2.7	1.76	9.0	4.7	2.9
8	25	5.2	3.55	4.6	39	25	15.9	77	3.75	8.4	4.2	2.8
9	10.3	4.7	5.4	4.1	24.5	113	24	12.3	4.2	6.2	4.0	2.6
10	8.1	4.3	4.3	4.3	13.5	110	11.8	5.3	2.6	5.4	3.8	2.35
11	33.5	6.0	6.6	9.8	53	42	13.4	3.9	2.85	17.2	3.7	10.9
12	11.2	5.6	7.0	7.5	a27	138	10.0	3.55	11.9	29	3.25	9.9
13	8.1	5.5	4.3	8.1	a10	147	8.1	4.7	200	8.2	3.55	3.25
14	6.5	4.1	3.55	5.3	a11	69	7.1	15.3	19.0	6.5	3.2	2.8
15	6.2	72	3.35	4.2	a8.7	48	6.4	12.2	11.0	10.1	3.35	2.5
16	5.6	231	3.1	3.8	a35	73	6.8	18.3	6.5	18.2	3.25	2.3
17	74	15.4	2.95	4.0	a15	37	102	5.7	4.6	8.0	2.8	2.2
18	75	8.6	2.9	3.65	a10	40	18.3	4.3	3.65	5.9	2.65	2.35
19	29.5	6.5	4.0	7.7	a7.5	32.5	10.3	3.8	3.2	5.3	2.6	2.2
20	11.8	13.4	3.05	42	a6.5	36.5	7.6	3.55	2.9	4.6	2.5	1.98
21	10.1	6.5	3.75	26.5	a6.0	75	6.4	3.2	2.65	4.9	2.4	1.92
22	8.1	24.5	2.75	31	5.8	129	5.6	3.0	10.4	11.5	2.3	3.1
23	7.0	26	63	29.5	7.7	168	5.0	2.8	29.5	44	2.2	12.0
24	12.2	9.0	9.0	19.6	8.7	494	4.7	2.75	21	139	2.15	5.7
25	8.6	6.8	4.6	29	a37	110	4.3	2.6	33.5	33	3.15	2.8
26	11.1	5.8	3.8	42	a35	56	4.1	2.5	31.5	68	3.55	2.65
27	22.5	5.3	168	97	a84	34	4.6	2.6	13.6	17.3	24	2.35
28	40	5.2	70	158	a105	58	4.3	2.5	42	12.0	8.0	2.3
29	14.8	5.2	9.6	144	a70	127	3.65	-	56	7.9	9.4	2.1
30	10.9	7.6	99	60	a21	117	3.55	-	93	7.2	3.9	2.1
31	23	10.5	-	27.5	-	63	3.65	-	52	-	3.2	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	79	5.4	23.2	35.9	720	2,210
August	231	4.1	18.0	27.9	559	1,720
September	168	2.75	17.4	26.9	523	1,610
October	158	3.65	29.4	45.5	910	2,790
November	105	5.8	24.7	38.2	742	2,280
December	494	7.9	83.2	129	2,580	7,910
Calendar year 1948	1,460	2.75	38.8	60.0	14,200	43,600
January	102	3.55	14.8	22.9	458	1,400
February	77	2.5	7.60	11.8	213	653
March	200	1.76	21.8	33.7	675	2,070
April	139	4.6	20.4	31.6	614	1,880
May	24	2.15	4.95	7.66	153	470
June	12.0	1.92	3.86	5.97	116	356
Fiscal year 1948-49	494	1.76	22.6	35.0	8,260	25,350

Peak discharge (base, 1,200 m.g.d.).--Aug. 16 (10 a.m.) 1,460 m.g.d. (2,260 sec.-ft.); Sept. 27 (10 p.m.) 2,260 m.g.d. (3,500 sec.-ft.); Dec. 24 (2 a.m.) 1,230 m.g.d. (1,900 sec.-ft.).

a No gage-height record; discharge computed on basis of records for East and West Wailuanui and East Wailuaiki Streams.

East Wailuanui Stream near Keanae

Location.--Lat. 20°49'25", long. 156°08'40", 125 feet upstream from Koolau ditch intake, 250 feet upstream from trail, and 2½ miles south of Keanae.

Drainage area.--0.6 square mile.

Records available.--November 1921 to June 1949. January 1914 to October 1917 at site 500 feet upstream.

Average discharge.--27 years (1922-49), 5.72 million gallons a day (8.85 second-feet).

Extremes.--Maximum discharge during year, 555 million gallons a day (859 second-feet) Sept. 27 (gage height, 4.71 feet), from rating curve extended above 50 million gallons a day by logarithmic plotting; minimum, 0.47 million gallons a day (0.73 second-foot) Mar. 7.

1914-17, 1921-49: Maximum discharge, 1,050 million gallons a day (1,620 second-feet) Feb. 12, 1925 (gage height, 6.96 feet), from rating curve extended above 100 million gallons a day; minimum, 0.1 million gallons a day (0.2 second-foot) Apr. 11, 1926.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.30	0.7	6.7	1.3	32.5
.4	.89	.8	9.6	1.5	45
.5	2.1	.9	13.0	1.8	68
.6	4.2	1.1	22	2.2	105

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.75	3.35	1.72	20.5	5.4	18.7	9.5	0.89	0.65	5.5	1.80	1.29
2	4.3	2.5	3.1	4.7	3.15	5.8	13	.80	.65	5.1	1.65	1.80
3	5.2	2.1	1.65	4.0	2.75	4.0	9.0	1.09	.65	4.4	1.52	3.2
4	7.8	1.95	1.40	2.5	2.3	3.2	4.5	.80	.59	2.3	2.4	1.95
5	13.9	1.65	1.29	2.1	2.1	2.7	3.6	.72	.53	4.6	1.65	4.9
6	11.8	5.0	1.19	1.65	1.80	3.3	3.0	.72	.53	2.1	2.85	1.80
7	14.3	2.1	1.40	1.52	1.65	2.2	2.5	.77	.53	2.5	1.29	1.40
8	7.0	1.65	1.19	1.40	5.0	4.5	4.0	19.1	.99	2.75	1.09	1.29
9	3.15	1.65	1.65	1.29	3.95	18	7.5	2.2	.89	1.80	.99	1.19
10	2.5	1.40	1.40	1.19	2.5	17	3.5	1.29	.72	1.65	.89	1.09
11	12.1	1.95	1.80	2.65	11.8	9.5	3.9	1.09	1.09	6.8	.89	4.6
12	3.15	1.80	1.65	1.91	7.2	23	2.5	1.09	9.7	12.8	.99	3.65
13	2.5	2.1	1.19	2.45	3.15	32	1.95	1.65	45	2.75	1.19	1.29
14	2.1	1.40	1.09	1.65	3.15	16	1.80	5.1	3.8	1.95	.99	1.19
15	2.1	21.5	1.09	1.29	2.65	11	1.80	4.0	2.5	3.35	.99	1.09
16	1.80	42	.99	1.19	6.7	14	1.65	6.3	1.65	5.3	.99	.99
17	9.2	3.55	.89	1.29	4.6	8.6	8.7	1.74	1.19	1.80	.89	.89
18	10.4	2.5	.89	1.19	2.95	8.4	3.15	1.29	1.09	1.65	.80	.89
19	8.1	1.95	1.61	3.85	2.5	6.0	2.5	1.19	.99	1.52	.72	.89
20	3.8	5.3	.89	12.4	1.95	8.0	1.80	1.09	.89	1.29	.72	.80
21	4.2	2.1	1.29	4.3	1.80	18	1.65	.99	.80	1.65	.65	.72
22	3.8	7.9	.89	5.5	1.65	30	1.52	.89	.41	5.8	.65	1.63
23	2.75	10.1	17.1	5.2	2.7	35	1.40	.89	5.6	14.1	.65	5.0
24	6.8	3.15	1.95	2.75	3.85	100	1.29	.80	4.5	29	.59	2.4
25	4.0	2.3	1.40	5.9	12.3	25	1.19	.72	9.4	5.6	1.22	1.09
26	5.4	1.95	1.19	9.9	10.7	11	1.19	.72	4.8	15.8	1.63	.89
27	8.3	1.80	34	13.7	13.8	7.0	1.29	.72	6.1	4.8	16.9	.89
28	13.2	1.65	9.4	19.2	7.5	10	1.19	.72	14.7	3.55	5.7	.89
29	5.5	1.80	2.3	14.1	7.0	26	1.09	-	14.4	2.3	7.7	.89
30	3.55	2.95	24	8.0	4.4	30	.99	-	19.9	2.1	2.1	.89
31	6.1	3.55	-	6.1	-	16	.99	-	10.3	-	1.52	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14.3	1.80	6.18	9.56	192	588
August	42	1.40	4.73	7.32	147	450
September	34	.89	4.05	6.27	122	373
October	20.5	1.19	5.33	8.25	165	508
November	13.8	1.65	4.76	7.36	143	439
December	100	2.2	16.9	26.1	524	1,610
Calendar year 1948	200	.89	7.93	12.3	2,900	8,920
January	13	.99	3.34	5.17	104	318
February	19.1	.72	2.12	3.28	59.4	182
March	45	.41	5.34	8.26	166	508
April	29	1.29	5.22	8.08	157	481
May	16.9	.59	2.08	3.22	64.6	198
June	5.0	.72	1.72	2.66	51.5	158
Fiscal year 1948-49	100	.41	5.19	8.03	1,900	5,810

Peak discharge (base, 300 m.g.d.).--Aug. 15 (5:30 p.m.) 370 m.g.d. (572 sec.-ft.); Sept. 27 (10 p.m.) 555 m.g.d. (859 sec.-ft.).

Note.--No gage-height record Dec. 3 to Jan. 10, May 9-11; discharge computed on basis of records for West Wailuanui and East Wailuaiki Streams.

West Wailuanui Stream near Keanae

Location.--Columbus-type control, lat. 20°49'40", long. 156°08'55", 150 feet upstream from Koolau ditch crossing and intake and 2½ miles south of Keanae.

Drainage area.--0.7 square mile.

Records available.--December 1913 to October 1917, July 1922 to June 1949.

Average discharge.--27 years (1922-49), 9.21 million gallons a day (14.2 second-feet).

Extremes.--Maximum discharge during year, 580 million gallons a day (897 second-feet) Sept. 27 (gage height, 4.87 feet), from rating curve extended above 130 million gallons a day by logarithmic plotting; minimum, 0.72 million gallons a day (1.11 second-feet) Mar. 6-8.

1913-17, 1922-49: Maximum discharge, 1,730 million gallons a day (2,680 second-feet) Jan. 25, 1948 (gage height, 7.32 feet), from rating curve extended above 130 million gallons a day; minimum, 0.2 million gallons a day (0.3 second-foot) July 16-21, 1922.

Remarks.--Records good. No diversions above station. Water used for irrigation of sugarcane in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.8	0.89	1.3	5.8	1.8	23
.9	1.36	1.4	8.0	2.0	36
1.0	2.0	1.5	10.5	2.2	51
1.1	2.9	1.6	13.7	2.5	81
1.2	4.1	1.7	18.0	3.0	151

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	4.6	2.2	24.5	14.7	40	14.0	1.27	0.94	13.4	2.65	1.55
2	4.5	4.2	3.55	8.2	7.4	11.2	18.2	1.22	.89	10.2	2.55	2.35
3	5.2	3.75	2.2	5.6	4.8	6.6	13.4	1.35	.89	6.5	2.2	3.35
4	7.6	3.15	1.81	3.5	3.75	5.0	6.9	1.22	.82	3.75	3.5	2.3
5	15.6	2.65	1.74	3.15	3.25	4.1	5.5	1.08	.82	6.3	2.75	4.7
6	17.3	5.9	1.62	2.45	2.65	5.1	4.6	1.03	.75	3.4	3.85	2.0
7	21.5	3.05	1.81	2.2	2.35	3.4	3.85	1.06	.72	3.6	2.1	1.55
8	9.8	2.45	1.55	1.87	13.7	8.2	5.9	30.5	1.32	3.8	1.81	1.42
9	4.6	2.2	2.1	1.74	7.6	39	10.1	5.5	1.45	2.65	1.68	1.31
10	3.6	2.0	1.81	1.81	5.1	38.5	5.1	2.2	1.03	2.25	1.62	1.22
11	13.8	2.65	2.25	3.6	16.5	18.0	5.6	1.62	1.36	7.3	1.55	5.0
12	5.0	2.45	2.35	2.7	9.3	44	3.75	1.49	8.8	13.5	1.42	4.5
13	3.75	2.6	1.68	3.0	4.4	60	3.15	2.1	62	3.5	1.62	1.49
14	3.15	1.81	1.42	2.05	4.2	28	2.7	5.5	6.8	2.7	1.42	1.31
15	3.0	27	1.36	1.55	3.35	19.1	2.45	4.6	4.1	3.75	1.45	1.27
16	2.55	72	1.31	1.49	9.2	25	2.35	6.8	2.45	7.0	1.50	1.22
17	20	7.5	1.22	1.68	6.2	14.6	43	2.15	1.81	2.9	1.22	1.12
18	26	3.85	1.22	1.42	4.6	14.2	9.2	1.74	1.49	2.45	1.12	1.17
19	11.9	3.15	2.15	4.4	3.25	10.4	4.7	1.55	1.31	2.25	1.08	1.08
20	5.8	6.6	1.22	12.1	2.65	14.1	3.15	1.42	1.22	1.94	1.03	.98
21	5.5	2.9	1.66	5.8	2.35	28	2.65	1.31	1.12	2.2	.98	.89
22	4.8	8.8	1.12	7.4	2.3	47	2.25	1.27	4.3	6.2	.98	1.80
23	3.5	10.8	21	7.5	3.25	57	2.0	1.22	6.7	13.2	.89	5.5
24	6.7	3.75	3.2	4.6	4.3	169	1.87	1.12	5.4	48	.89	2.75
25	4.3	2.9	1.87	7.1	13.3	55	1.74	1.08	10.4	10.4	1.83	1.22
26	5.6	2.55	1.55	13.1	11.6	22.5	1.62	1.03	9.0	24	2.2	1.12
27	8.6	2.25	45	29.5	23	13.6	1.84	1.08	6.3	7.8	16.9	1.03
28	14.9	2.25	25.5	53	47	20	1.62	1.03	15.7	5.3	5.5	1.08
29	6.6	2.45	4.1	54	32.5	44	1.49	-	18.1	3.6	7.2	.94
30	4.4	3.65	32	25.5	9.5	50	1.42	-	33.5	3.25	2.2	.98
31	7.6	4.0	-	11.9	-	25.5	1.42	-	17.7	-	1.68	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	26	2.55	8.40	13.0	260	799
August	72	1.81	6.77	10.5	210	644
September	45	1.12	5.79	8.96	174	533
October	54	1.42	9.95	15.4	308	946
November	47	2.3	9.27	14.3	278	853
December	169	3.4	30.3	46.9	940	2,890
Calendar year 1948	629	1.12	14.4	22.3	5,270	16,180
January	43	1.42	6.05	9.36	188	575
February	30.5	1.03	3.02	4.67	84.5	259
March	62	.72	7.39	11.4	229	703
April	48	1.94	7.57	11.7	227	697
May	16.9	.89	2.56	3.96	79.4	244
June	5.5	.89	1.94	3.00	58.2	179
Fiscal year 1948-49	169	.72	8.32	12.9	3,040	9,320

Peak discharge (base, 300 m.g.d.).--Sept. 27 (11 p.m.) 580 m.g.d. (897 sec.-ft.).

Taro patch feeder ditch at Keanae

Location.--Concrete Parshall flume, lat. 20°51'40", long. 156°09'00", 25 feet downstream from intake, 500 feet downstream from highway bridge over Palauhulu Stream at Keanae, 4¼ miles northwest of Nahiku, and 4¾ miles southeast of Kailua.

Records available.--September 1934 to June 1949.

Average discharge.--14 years (1935-49), 2.32 million gallons a day (3.59 second-feet).

Extremes.--Maximum discharge during year, 12.5 million gallons a day (19.3 second-feet) Sept. 27 (gage height, 2.15 feet); minimum, 1.10 million gallons a day (1.70 second-feet) Oct. 18.

1934-49: Maximum discharge, 19.4 million gallons a day (30.0 second-feet) Feb. 25, 1935, Oct. 8, 1941 (gage heights, 2.86 and 2.92, respectively), from rating curves extended above 4.5 million gallons a day by Parshall flume formula and logarithmic plotting; minimum, 0.05 million gallons a day (0.08 second-foot) Feb. 28, 1935, Apr. 7, 8, 1938, Mar. 5, 6, 1939.

Remarks.--Records excellent.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.77	1.81	1.77	2.35	1.81	2.75	2.25	1.51	1.77	2.6	2.2	1.81
2	1.81	1.86	1.81	1.64	1.55	2.2	2.45	1.47	1.77	2.55	2.2	1.81
3	1.95	1.77	1.77	1.59	1.51	2.1	2.4	1.47	1.77	2.45	2.15	1.81
4	2.05	1.73	1.73	1.39	1.47	1.95	2.1	1.43	1.77	2.3	2.25	1.73
5	2.45	1.68	1.68	1.34	1.39	1.86	1.99	1.43	1.77	2.45	2.25	1.81
6	2.5	1.77	1.68	1.34	1.34	1.99	1.99	1.43	1.77	2.3	2.2	1.73
7	2.35	1.77	1.64	1.34	1.34	1.90	1.90	1.43	1.77	2.3	2.1	1.64
8	2.1	1.68	1.59	1.34	1.90	2.15	2.05	2.4	1.81	2.3	1.99	1.64
9	1.95	1.68	1.59	1.30	2.1	2.85	2.2	1.86	1.95	2.2	1.95	1.59
10	1.90	1.64	1.55	1.26	1.95	2.8	1.95	1.68	1.73	2.15	1.90	1.59
11	2.2	1.64	1.55	1.43	2.45	2.3	2.05	1.64	1.73	2.35	1.86	1.81
12	1.95	1.59	1.55	1.39	2.15	2.9	1.90	1.59	1.91	2.7	1.81	2.1
13	1.90	1.59	1.47	1.43	1.99	3.05	1.86	1.59	3.9	2.35	1.81	1.59
14	1.81	1.55	1.39	1.30	1.95	3.0	1.81	1.77	2.45	2.25	1.81	1.51
15	1.77	2.1	1.34	1.22	1.86	2.75	1.77	1.90	2.3	2.25	1.90	1.51
16	1.77	3.05	1.34	1.14	2.25	2.65	1.73	2.1	2.15	2.6	1.99	1.51
17	2.2	1.73	1.34	1.14	2.05	2.35	2.45	1.73	1.99	2.3	1.86	1.51
18	2.2	1.77	1.34	1.10	1.95	2.45	1.90	1.59	1.95	2.15	1.81	1.55
19	2.05	1.86	1.34	1.30	1.86	2.3	1.81	1.51	1.90	2.1	1.77	1.55
20	1.86	1.95	1.47	1.71	1.77	2.4	1.73	1.47	1.86	1.99	1.77	1.55
21	1.81	1.81	1.59	1.68	1.73	2.95	1.68	1.51	1.77	1.99	1.73	1.55
22	1.77	1.99	1.64	1.73	1.68	3.3	1.68	1.77	2.2	2.2	1.73	1.55
23	1.68	2.2	2.6	1.68	1.86	3.15	1.68	1.99	2.5	2.65	1.68	1.99
24	1.73	1.90	2.1	1.55	1.90	4.0	1.68	1.95	2.4	3.4	1.68	1.55
25	1.68	1.86	1.95	1.64	2.0	1.62	1.64	1.90	2.45	2.5	1.68	1.55
26	1.68	1.81	1.86	1.95	2.4	1.39	1.59	1.86	2.5	2.95	1.68	1.55
27	1.81	1.77	3.1	2.25	2.45	1.22	1.64	1.81	2.35	2.5	2.5	1.55
28	2.25	1.77	2.1	2.7	2.6	2.0	1.64	1.77	2.65	2.45	2.2	1.51
29	1.86	1.77	1.43	2.55	2.45	2.95	1.55	-	2.85	2.3	2.25	1.51
30	1.81	1.77	2.45	2.05	2.1	2.8	1.55	-	3.1	2.3	2.1	1.51
31	1.95	1.81	-	1.77	-	2.45	1.55	-	2.7	-	1.95	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	2.5	1.68	1.95	3.02	60.6	186
August	3.05	1.55	1.83	2.83	56.7	174
September	3.1	1.34	1.73	2.68	51.8	159
October	2.7	1.10	1.60	2.48	49.6	152
November	2.6	1.34	1.93	2.99	57.8	177
December	4.0	1.22	2.47	3.82	76.5	235
Calendar year 1948	7.6	1.05	2.10	3.25	768	2,360
January	2.45	1.55	1.88	2.91	58.2	179
February	2.4	1.43	1.70	2.63	47.6	146
March	3.9	1.73	2.18	3.37	67.5	207
April	3.4	1.99	2.40	3.71	71.9	221
May	2.5	1.68	1.96	3.03	60.8	186
June	2.1	1.51	1.64	2.54	49.2	151
Fiscal year 1948-49	4.0	1.10	1.94	3.00	708	2,170

Koolau ditch near Keanae

Location.--Lat. 20°49'55", long. 156°10'30", on west side of Keanae Valley, 2¾ miles southwest of Keanae and 5.1 miles southeast of Kailua.

Records available.--January 1910 to December 1912 (staff gage), November 1917 to June 1949.

Average discharge.--31 years (1918-49), 66.8 million gallons a day (103 second-feet).

Extremes.--Maximum capacity of ditch during year, limited to 141 million gallons a day (218 second-feet) by downstream conditions, was reached frequently; minimum, 18.7 million gallons a day (28.9 second-feet) Mar. 7, 8.
1910-12, 1917-49: Maximum discharge, 175 million gallons a day (271 second-feet) Jan. 4, 1922 (gage height, 6.36 feet); no flow occasionally.

Remarks.--Records excellent below 100 million gallons a day, fair above, except those for periods of no gage-height record, which are fair. Ditch diverts water at altitude 1,200 feet from nearly all streams from the Makapipi west to the Alo for power and irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	53	92	48	131	138	133	55	31	23	136	53	31
2	71	82	74	128	106	140	55	30	21.5	137	51	39
3	84	68	46	100	83	118	55	31	21.5	106	44	56
4	96	55	39	64	64	98	55	29	21.5	68	55	44
5	141	48	35	64	59	76	52	28	20	106	51	67
6	140	92	33	51	51	96	52	26	20	68	64	37
7	140	58	39	44	46	68	52	26	18.7	72	44	31
8	136	44	33	39	120	112	52	67	26.5	76	37	28
9	88	41	44	35	116	134	55	64	32.5	53	36	26
10	72	39	39	35	89	134	50	44	24.5	46	35	24.5
11	112	50	50	68	112	141	52	35	28	92	33	58
12	90	51	53	60	134	122	46	33	38	130	30	85
13	70	50	37	61	92	103	43	46	138	72	32	33
14	57	37	31	44	86	69	39	49	118	57	29	29.5
15	51	78	29.5	35	68	87	39	64	80	66	30	26
16	48	138	29.5	31	134	87	41	64	51	111	31	24.5
17	126	108	28	35	108	83	48	53	37	64	25	24.5
18	141	60	28	31	83	83	50	41	31	51	24	24.5
19	138	57	38.5	65	64	83	49	35	28	46	23	23
20	95	107	28	75	55	83	46	33	26	41	22	21.5
21	86	60	32.5	115	51	83	45	31	24.5	44	22	20
22	72	118	26	124	48	83	43	29.5	75	88	21	44
23	59	136	122	136	65	76	43	28	129	132	20	114
24	100	82	69	102	82	74	41	26	120	138	20	49
25	78	59	39	100	83	72	40	26	98	129	31	26
26	98	53	33	140	133	72	37	24.5	122	138	34	23
27	131	48	98	137	115	72	37	24.5	110	125	114	21.5
28	132	46	126	134	134	72	39	24.5	131	101	117	21.5
29	115	50	64	122	138	70	35	-	140	68	106	20
30	94	69	85	138	133	68	34	-	138	64	41	20
31	120	90	-	139	-	68	33	-	140	-	33	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	141	48	97.9	151	3,030	9,310
August	138	37	69.9	108	2,170	6,650
September	126	26	49.2	76.1	1,480	4,530
October	140	31	83.3	129	2,580	7,930
November	138	46	93.0	144	2,790	8,560
December	141	68	92.3	143	2,860	8,780
Calendar year 1948	141	0	79.0	122	28,930	88,760
January	55	33	45.6	70.6	1,410	4,340
February	67	24.5	37.2	57.6	1,040	3,200
March	140	18.7	65.6	101	2,030	6,240
April	138	41	87.5	135	2,620	8,060
May	117	20	42.2	65.3	1,310	4,010
June	114	20	36.4	56.3	1,090	3,350
Fiscal year 1948-49	141	18.7	66.9	104	24,410	74,960

Note.--No gage-height record Dec. 23 to Feb. 4, May 9-25; discharge computed on basis of engineer's notes, recorded range in stage, and records for stations on nearby ditches.

Honomanu Stream near Keanae

Location.--Columbus-type control, lat. 20°50'10", long. 156°11'20", 500 feet upstream from Spreckels ditch intake and trail bridge, 3 miles southwest of Keanae, and 4½ miles southeast of Kailua.

Drainage area.--3.3 square miles.

Records available.--November 1913 to June 1949.

Average discharge.- 33 years (1916-49), 15.7 million gallons a day (24.3 second-feet).

Extremes.--Maximum discharge during year, 710 million gallons a day (1,100 second-feet Sept. 27 (gage height, 5.16 feet), from rating curve extended above 300 million gallons a day; minimum, 0.48 million gallons a day (0.74 second-foot) May 25.
1913-49: Maximum discharge, 1,780 million gallons a day (2,750 second-feet) Jan. 26, 1948 (gage height, 8.38 feet), from rating curve extended above 300 million gallons a day; minimum, 0.08 million gallons a day (0.12 second-foot) Mar. 24, 1928.

Remarks.--Records good below 10 million gallons a day, fair above. No diversions. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.42	1.4	8.25	2.6	109
.7	.66	1.6	15.1	3.0	172
.8	.99	1.8	26	3.5	268
1.0	2.11	2.0	41		
1.2	4.35	2.3	70		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.5	8.4	3.4	51	28.5	53	13.3	1.58	0.92	21	2.55	1.30
2	5.4	6.6	5.0	11.2	7.9	13.4	41	1.46	.88	16.3	2.55	1.89
3	7.8	14.6	2.75	6.9	4.5	7.5	33	1.59	.85	7.4	2.05	6.1
4	19.0	6.1	2.2	3.7	3.7	4.7	7.5	1.60	1.03	4.1	10.8	2.95
5	52	3.7	2.05	3.2	3.3	4.2	5.0	1.52	.99	11.3	3.95	3.85
6	66	10.7	1.90	2.45	2.95	5.4	4.1	1.20	.88	4.9	3.65	2.2
7	61	5.8	2.25	2.1	2.75	3.55	3.45	1.11	.82	5.2	2.1	1.58
8	16.7	3.55	1.83	1.90	42	19.0	7.0	53	3.05	6.3	1.83	1.35
9	6.2	3.3	3.45	1.76	13.4	91	15.1	6.4	3.6	3.85	1.64	1.15
10	5.0	2.85	3.05	1.83	6.7	81	4.9	1.83	1.64	3.05	1.46	.99
11	47	3.95	4.8	8.6	29.5	20.5	8.7	1.35	5.6	15.3	1.35	7.7
12	9.0	3.9	4.7	4.3	8.6	106	5.8	1.15	9.2	27	1.20	7.9
13	6.6	3.2	2.25	4.2	4.9	103	3.45	1.83	124	5.9	1.30	2.1
14	5.0	2.45	1.70	2.45	6.2	41	2.85	9.3	9.9	3.7	1.25	1.52
15	4.7	93	1.64	2.45	4.6	29	2.55	6.9	6.5	8.3	2.05	1.76
16	4.1	64	1.46	2.2	24.5	58	2.55	7.8	3.2	16.9	1.80	1.20
17	79	8.8	1.35	2.05	14.8	23	55	2.35	2.05	4.2	1.15	1.03
18	68	6.4	1.30	1.76	6.8	26.5	7.6	1.58	1.64	2.95	.95	1.15
19	22.5	3.95	1.63	4.9	3.95	19.9	4.5	1.35	1.40	2.55	.82	1.29
20	7.7	16.8	1.59	41	3.2	21.5	3.05	1.25	1.20	2.1	.75	1.56
21	6.9	4.6	1.92	24	4.1	71	2.55	1.11	1.11	2.1	.69	1.20
22	5.2	25.5	1.20	21.5	4.0	126	2.35	1.07	9.8	6.3	.63	2.9
23	4.6	21	56	16.3	6.4	100	2.1	1.03	18.8	28	.58	17.0
24	8.0	6.2	4.4	8.7	6.6	250	2.05	.95	8.9	108	.53	13.3
25	5.7	3.85	2.1	15.9	18.9	84	2.05	.92	28.5	16.4	1.75	13.5
26	10.1	3.05	1.76	25	23.5	40	2.25	.92	17.6	61	1.89	3.45
27	17.8	2.65	89	62	53	19.0	2.35	.99	6.5	9.8	19.5	1.46
28	40	2.45	33.5	112	81	35.5	2.85	1.03	25	7.1	5.8	1.15
29	11.8	2.8	3.85	98	46	90	1.90	-	46	3.95	5.9	.95
30	7.6	5.4	70	36	9.3	82	1.76	-	77	3.2	2.2	.88
31	26.5	9.1	-	17.5	-	36.5	1.76	-	30	-	1.52	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	79	4.1	20.7	32.0	642	1,970
August	93	2.45	11.6	17.9	359	1,100
September	89	1.20	10.5	16.2	314	964
October	112	1.76	19.3	29.9	597	1,830
November	81	2.75	15.9	24.6	476	1,460
December	250	3.55	53.7	83.1	1,670	5,110
Calendar year 1948	649	1.20	25.0	38.7	9,150	28,040
January	55	1.76	8.21	12.7	254	781
February	53	.92	4.08	6.31	114	350
March	124	.82	14.5	22.4	449	1,380
April	108	2.1	13.9	21.5	418	1,280
May	19.5	.53	2.78	4.30	86.2	265
June	17.0	.88	3.55	5.49	106	326
Fiscal year 1948-49	250	.53	15.0	23.2	5,490	16,820

Peak discharge (base, 700 m.g.d.).--Sept. 27 (10 p.m.) 710 m.g.d. (1,100 sec.-ft.).

208538 O - 52 - 7

Haipuaena Stream near Huelo

Location.--Lat. 20°51'05", long. 156°11'30", 200 feet upstream from inflow of Spreckels ditch, 2.8 miles west of Keanae, 3.3 miles southeast of Kailua, and 4.7 miles southeast of Huelo. Datum of gage is 1,512.22 feet above mean sea level (East Maui Irrigation Co. bench mark).

Drainage area.--1.1 square miles.

Records available.--October 1913 to June 1949.

Average discharge.--33 years (1916-49), 10.3 million gallons a day (15.9 second-feet).

Extremes.--Maximum discharge during year, 1,050 million gallons a day (1,620 second-feet) Sept. 27 (gage height, 4.80 feet), from rating curve extended above 150 million gallons a day; minimum daily, 0.1 million gallons a day (0.2 second-foot) Mar. 21, May 21-24.
1913-49: Maximum discharge, 6,100 million gallons a day (9,440 second-feet) Aug. 12, 1940 (gage height, 6.91 feet), from rating curve extended above 150 million gallons a day; minimum, slightly less than 0.1 million gallons a day (about 0.2 second-foot) on several days during January, February, May, and June, 1945.

Remarks.--Records poor. Haipuaena diversion ditch diverts water above station. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.3	5.0	2.0	32.5	14.8	21.5	9.0	0.7	0.4	11.9	1.0	0.3
2	3.9	3.2	3.4	7.1	5.2	6.1	29.5	.6	.4	8.4	1.0	.8
3	5.3	4.7	1.8	4.8	3.3	3.6	19.0	1.1	.4	3.6	.7	2.2
4	10.8	3.3	1.4	2.7	2.7	2.2	5.2	.8	.4	1.7	3.2	1.2
5	28.5	2.1	1.2	2.4	2.4	1.7	3.8	.7	.4	5.1	1.7	2.5
6	35	6.7	1.1	1.7	1.9	2.4	3.1	.5	.3	1.9	1.7	.8
7	32.5	3.7	1.3	1.5	1.6	1.5	2.7	.5	.3	2.2	.6	.4
8	10.8	2.2	1.0	1.3	22.5	7.1	4.3	36.5	.4	2.8	.3	.2
9	4.4	2.0	1.7	1.1	6.0	39	8.6	4.0	1.0	1.4	.2	.2
10	3.3	1.6	1.5	1.2	5.2	39	3.1	1.5	.3	.9	.2	.2
11	26.5	2.0	2.1	4.8	20	8.8	7.2	1.0	1.6	8.0	.2	3.7
12	5.5	2.1	2.3	2.6	7.6	41	3.9	.9	5.9	18.4	.2	5.1
13	4.2	2.0	1.2	2.4	3.5	45	2.5	1.4	94	2.8	.2	.8
14	3.3	1.4	.9	1.6	3.4	17.0	2.0	6.1	3.7	1.4	.2	.2
15	3.2	71	.8	1.2	2.7	11.5	1.8	5.3	2.0	2.7	.5	.3
16	2.6	32	.8	1.3	14.2	23	1.8	7.0	.8	8.3	.5	.2
17	37	5.0	.6	1.2	8.5	10.4	20.5	2.2	.3	1.6	.2	.2
18	34	3.4	.6	1.0	4.6	13.1	3.7	1.4	.2	.9	.2	.2
19	14.0	2.3	1.1	3.0	2.7	9.6	2.8	1.2	.2	.7	.2	.2
20	5.7	8.9	.6	21	2.1	10.0	2.0	1.0	.2	.5	.2	.2
21	4.9	2.7	1.2	12.5	1.8	37	1.5	.9	.1	.6	.1	.2
22	4.1	13.7	.5	11.8	2.3	62	1.4	.8	3.9	2.9	.1	1.1
23	3.0	14.1	32.5	10.2	3.9	50	1.3	.7	8.1	15.4	.1	10.0
24	6.6	4.3	3.2	5.6	4.5	195	1.2	.7	4.0	65	.1	4.3
25	3.6	2.6	1.3	9.3	22	38.5	1.1	.6	16.7	9.6	.4	3.7
26	5.4	2.0	1.0	16.5	16.9	21.5	1.1	.5	9.2	35.5	.5	1.2
27	11.3	1.9	83	37.5	42	12.2	1.1	.5	3.5	6.3	13.5	.2
28	26	1.7	24	70	27.5	22.5	1.4	.6	16.2	4.0	3.8	.2
29	7.4	1.7	2.9	50	17.9	50	.9	-	27	1.8	4.7	.2
30	4.8	3.1	41	20.5	4.0	44	.8	-	47	1.5	1.0	.2
31	11.9	5.7	-	11.2	-	21	.8	-	11.3	-	.4	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	37	2.6	11.7	18.1	363	1,110
August	71	1.4	7.04	10.9	218	669
September	83	.5	7.27	11.2	218	669
October	70	1.0	11.3	17.5	352	1,080
November	42	1.6	9.26	14.3	278	852
December	195	1.5	28.0	43.3	867	2,660
Calendar year 1948	448	.5	14.1	21.8	5,170	15,880
January	29.5	.8	4.81	7.44	149	458
February	36.5	.5	2.85	4.41	79.7	245
March	94	.1	8.39	13.0	260	799
April	65	.5	7.59	11.7	228	699
May	13.5	.1	1.22	1.89	37.9	116
June	10.0	.2	1.37	2.12	41.2	126
Fiscal year 1948-49	195	.1	8.47	13.1	3,090	9,480

Peak discharge (base, 350 m.g.d.).--Aug. 15 (6:30 p.m.) 580 m.g.d. (897 sec.-ft.); Sept. 27 (10 p.m.) 1,000 m.g.d. (1,550 sec.-ft.); Dec. 24 (1:30 p.m.) 470 m.g.d. (727 sec.-ft.); Mar. 13 (5:30 a.m.) 445 m.g.d. (689 sec.-ft.).

Kula diversion from Haipuaena Stream, near Olinda

Location.--Modified Parshall flume, lat. 20°48'15", long. 156°13'30", 3.7 miles east of Olinda and 5.2 miles south of Kailua. Altitude of gage, 4,300 feet (from topographic map).

Records available.--July 1945 to June 1949.

Extremes.--Maximum discharge during year, 3.5 million gallons a day (5.4 second-feet) Nov. 30 (gage height, 1.45 feet); minimum daily, 0.02 million gallons a day (0.03 second-foot) on several days in March and May.
1945-49: Maximum discharge, 3.8 million gallons a day, corrected (5.9 second-feet) Mar. 20, 1948; minimum daily, 0.02 million gallons a day (0.03 second-foot) on several days in 1945-47, 1949.

Remarks.- Records good except those for periods of no gage-height record, which are poor.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.78	0.49	0.28	1.18	1.20	1.31	0.60	0.12	0.02	0.72	0.18	0.10
2	.58	.36	.24	.86	.76	.82	1.2	.10	.02	.60	.14	.22
3	.47	.46	.18	.71	.53	.59	1.0	.09	.02	.47	.12	.38
4	.61	.37	.13	.42	.36	.36	.50	.09	.02	.30	.21	.28
5	1.27	.25	.11	.30	.28	.28	.40	.07	.02	.60	.28	.43
6	1.21	.66	.12	.22	.22	.33	.30	.06	.02	.35	.15	.22
7	1.00	.41	.11	.18	.18	.25	.25	.05	.02	.37	.12	.12
8	.78	.23	.10	.15	.79	.77	.44	.74	.04	.43	.09	.04
9	.64	.22	.12	.14	.60	1.06	1.18	.51	.12	.25	.07	.04
10	.54	.19	.18	.14	.62	.76	.54	.36	.02	.16	.05	.04
11	.73	.24	.62	.66	1.05	.43	.83	.25	.30	.66	.04	.70
12	.53	.20	.61	.51	.75	.55	.69	.18	.55	1.1	.04	.80
13	.43	.18	.25	.36	.51	.37	.42	.17	1.2	.40	.04	.30
14	.35	.17	.14	.21	.61	.99	.30	.54	.90	.25	.09	.46
15	.35	.21	.11	.14	.43	1.19	.24	.69	.76	.38	.09	.53
16	.25	.04	.09	.13	1.12	1.48	.25	.47	.41	.70	.08	.22
17	1.3	.03	.08	.12	.88	1.03	.74	.31	.24	.26	.05	.13
18	1.3	.40	.06	.10	.74	1.21	.35	.22	.15	.16	.04	.12
19	.85	.38	.05	.12	.48	.94	.31	.17	.04	.10	.04	.19
20	.55	.93	.05	.60	.31	.88	.44	.13	.04	.04	.03	.33
21	.50	.54	.04	1.13	.51	1.24	.44	.10	.04	.07	.03	.21
22	.43	.88	.04	1.18	.60	1.24	.35	.08	.35	.30	.02	.28
23	.34	.95	.72	1.08	.62	.92	.30	.07	.64	1.0	.02	1.11
24	.66	.69	.54	.80	.55	.27	.25	.05	.46	1.2	.02	1.00
25	.40	.42	.33	.88	.43	.20	.23	.04	.76	.80	.25	.85
26	.54	.30	.24	1.14	.72	.17	.23	.03	.68	1.1	.30	.58
27	.75	.22	.62	1.13	.63	.15	.23	.03	.37	.60	.95	.38
28	1.0	.18	.48	.98	.38	.17	.28	.03	.80	.53	.70	.24
29	.72	.15	.43	1.52	.33	.24	.21	-	1.1	.35	.76	.15
30	.47	.36	.98	1.27	.68	.21	.18	-	1.3	.25	.30	.12
31	.80	.68	-	1.05	-	.76	.16	-	.72	-	.16	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.3	0.25	0.682	1.06	21.1	65
August	.95	.03	.380	.588	11.8	36
September	.98	.04	.268	.415	8.05	25
October	1.52	.10	.626	.969	19.4	60
November	1.20	.18	.596	.922	17.9	55
December	1.48	.15	.683	1.06	21.2	65
Calendar year 1948	2.05	.03	.529	.818	194	595
January	1.2	.16	.446	.690	13.8	42
February	.74	.03	.205	.317	5.75	18
March	1.3	.02	.391	.605	12.1	37
April	1.2	.04	.483	.747	14.5	44
May	.95	.02	.176	.272	5.46	17
June	1.11	.04	.352	.545	10.6	32
Fiscal year 1948-49	1.52	.02	.443	.685	162	496

Note.--No gage-height record July 15 to Aug. 13, Jan. 1-5, Jan. 22 to Feb. 2, Feb. 25 to Mar. 14, Mar. 19 to Apr. 27, May 22 to June 13; discharge computed on basis of recorded range in stage and records for Haipuaena Stream near Huelo.

Haipuaena diversion ditch at Kolea Gulch, near Keanae

Location.--Parshall flume, lat. 20°50'50", long. 156°11'40", on Haipuaena diversion ditch, 15 feet downstream from end of tunnel in Kolea Gulch, 3.1 miles southwest of Keanae, and 3.7 miles southeast of Kailua. Altitude of gage, 1,800 feet (from topographic map).

Records available.--March 1938 to June 1949.

Average discharge.--11 years, 1.90 million gallons a day (2.94 second-feet).

Extremes.--Maximum discharge during year, 27.5 million gallons a day (42 second-feet) Sept. 27 (gage height, 2.71 feet); minimum, 0.64 million gallons a day (0.99 second-foot) Mar. 7.
1938-49: Maximum discharge, that of Sept. 27, 1948; minimum, 0.02 million gallons a day (0.03 second-foot) Apr. 29, 1941.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts water from Haipuaena Stream for East Maui Irrigation Co.'s hydroelectric plant about 1 mile downstream.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.69	2.05	1.5	4.5	3.0	4.5	2.4	1.0	0.80	3.55	2.25	1.69
2	1.82	1.83	1.9	2.4	1.96	2.55	4.5	.90	.80	3.35	2.25	1.90
3	2.0	2.1	1.6	2.05	1.69	2.1	3.5	1.01	.75	2.8	2.1	2.45
4	2.65	1.76	1.4	1.62	1.56	1.76	3	.96	.80	2.5	2.6	2.2
5	4.7	1.49	1.4	1.56	1.42	1.62	2.5	.96	.75	3.0	2.4	2.4
6	5.4	2.25	1.3	1.36	1.36	1.76	2.5	.90	.75	2.5	2.25	2.05
7	4.9	1.76	1.3	1.31	1.34	1.56	2.5	.85	.75	2.55	2.05	1.76
8	2.8	1.49	1.3	1.25	3.5	2.5	3	4.2	1.43	2.6	1.90	1.56
9	2.05	1.42	1.4	1.19	2.15	6.0	3.5	1.76	1.96	2.4	1.83	1.42
10	1.76	1.36	1.4	1.19	1.99	5.4	2.5	1.9	1.41	2.2	1.76	1.31
11	4.0	1.42	1.4	1.98	3.4	2.4	3	1.02	2.4	3.05	1.69	2.0
12	2.25	1.42	1.5	1.62	2.25	6.2	2.5	.90	2.45	4.1	1.56	2.8
13	1.90	1.42	1.4	1.56	1.76	6.3	1.9	1.07	7.1	2.6	1.69	1.99
14	1.76	1.31	1.4	1.31	1.69	4.0	1.6	1.83	2.95	2.3	1.56	1.62
15	1.69	3.8	1.3	1.25	1.56	3.35	1.5	1.92	2.6	2.5	1.74	1.62
16	1.56	2.6	1.2	1.25	3.1	4.6	1.5	2.1	2.2	3.05	1.83	1.36
17	5.4	2	1.2	1.25	2.3	3.1	4.5	1.36	1.90	2.25	1.42	1.25
18	5.2	1.7	1.2	1.13	1.96	3.35	3	1.13	1.69	2.05	1.25	1.36
19	3.1	1.5	1.5	1.59	1.62	3.0	2	1.07	1.56	1.96	1.19	1.25
20	2.2	1.7	1.2	3.55	1.42	3.1	1.7	1.02	1.36	1.90	1.13	1.36
21	1.96	1.5	1.5	3.0	1.42	5.9	1.4	.96	1.31	1.90	1.07	1.25
22	1.83	1.8	1.2	2.95	1.49	7.6	1.3	.90	2.65	2.35	1.02	1.59
23	1.69	2.2	3.0	2.8	1.76	6.1	1.2	.90	3.4	3.45	.96	3.3
24	2.15	1.9	1.49	2.2	1.76	10.0	1.1	.90	2.95	6.7	.90	2.7
25	1.76	1.6	1.25	2.55	2.55	5.1	1.0	.85	3.7	3.2	1.43	2.5
26	2.15	1.5	1.13	3.35	3.3	3.8	1.0	.85	3.35	5.3	1.83	2.05
27	2.9	1.5	5.1	4.9	3.7	2.85	1.0	.80	2.7	3.15	3.55	1.49
28	4.3	1.4	3.45	6.4	5.1	3.75	1.1	.80	3.95	2.85	2.6	1.25
29	2.55	1.4	1.62	6.2	4.0	6.0	1.0	-	4.9	2.5	2.7	1.19
30	2.1	1.8	5.3	3.4	2.2	5.6	1.0	-	6.1	2.3	2.1	1.19
31	2.9	2	-	2.7	-	3.45	1.0	-	4.0	-	1.83	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	5.4	1.56	2.75	4.25	85.1	261
August	3.8	1.31	1.77	2.74	55.0	169
September	5.3	1.13	1.76	2.72	52.8	162
October	6.4	1.13	2.43	3.76	75.4	231
November	5.1	1.34	2.28	3.53	68.3	210
December	10.0	1.56	4.17	6.45	129	397
Calendar year 1948	10.9	.96	2.62	4.05	958	2,940
January	4.5	1.0	2.10	3.25	65.2	200
February	4.2	.80	1.24	1.92	34.8	107
March	7.1	.75	2.43	3.76	75.4	231
April	6.7	1.90	2.90	4.49	86.9	267
May	3.55	.90	1.82	2.82	56.4	173
June	3.3	1.19	1.80	2.79	53.9	165
Fiscal year 1948-49	10.0	.75	2.30	3.56	838	2,570

Note.--No gage-height record Aug. 17 to Sept. 22, Jan. 2 to Feb. 1; discharge computed on basis of recorded range in stage and records for nearby streams and ditches.

Spreckels ditch at Haipuaena weir, near Huelo

Location.--Sharp-crested weir, lat. 20°51'20", long. 156°11'25", near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2½ miles west of Keanae, 3½ miles southeast of Kailua, and 4½ miles southeast of Huelo. Datum of gage is 1,470.96 feet above mean sea level (East Maui Irrigation Co. bench mark).

Records available.--April 1922 to June 1949. February 1930 to October 1935 at site 100 feet upstream.

Average discharge.- 26 years (1922-29, 1930-49), 13.6 million gallons a day (21.0 second-feet).

Extremes.--Maximum discharge during year, 73 million gallons a day (113 second-feet) Sept. 27 (gage height, 2.02 feet); minimum, 0.11 million gallons a day (0.17 second-foot Mar. 8.

1922-49: Maximum discharge, 139 million gallons a day (215 second-feet) Mar. 5, 1933 (gage height, 5.03 feet); no flow at times.

Remarks.--Records good. Spreckels ditch diverts water from all streams between the Nuaailua and the Kailua, above Koolau ditch east of the Puohokamoa and below Koolau ditch west of the Puohokamoa. About 4 million gallons a day is diverted from Spreckels ditch to East Maui Irrigation Co.'s hydroelectric plant at Kolea Gulch. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 770: 1932-33.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.0	17.0	5.4	27.5	13.8	28.5	10.8	0.47	0.27	19.0	1.36	0.43
2	5.3	13.2	7.6	10.7	6.0	11.5	17.6	.43	.19	15.9	1.47	1.21
3	6.6	14.1	5.0	8.2	3.9	8.4	16.4	2.4	.19	10.8	1.04	2.75
4	9.8	12.7	3.3	5.4	2.95	6.2	7.1	.71	.16	7.6	3.4	1.76
5	26	7.6	2.35	4.8	2.65	5.4	8.5	.67	.16	12.7	2.6	3.6
6	32	17.6	1.91	3.9	2.15	6.7	8.5	.35	.15	8.1	2.7	1.18
7	28	12.9	3.1	3.45	1.80	5.2	6.9	.35	.14	8.8	.76	.51
8	12.0	7.3	1.47	2.5	19.2	10.6	10.6	27.5	2.0	9.8	.43	.32
9	7.0	7.1	4.0	1.91	6.9	42	16.4	7.2	3.7	6.7	.32	.27
10	7.8	5.2	4.1	2.0	6.3	37.5	9.2	2.35	.62	4.7	.23	.23
11	32	7.5	5.3	6.8	21.5	21	14.5	1.58	7.2	13.4	.27	3.75
12	14.0	7.5	5.8	4.2	16.4	43	10.4	.69	5.4	25	.16	5.9
13	9.7	7.3	2.55	3.55	10.5	42	6.6	2.9	36.5	9.6	.27	1.03
14	9.4	3.9	.97	2.4	10.0	29.5	4.8	6.6	6.2	6.5	.27	.27
15	13.0	23.5	.90	1.80	7.8	14.3	3.9	6.9	4.0	7.5	.73	.27
16	10.0	34.5	.83	1.91	21.5	33.5	3.6	8.3	3.1	14.8	.80	.19
17	46	9.5	.51	1.80	16.4	23	20.5	3.0	1.31	6.5	.19	.16
18	48	7.6	.51	1.36	11.8	26	10.6	1.80	.35	4.8	.16	.23
19	30.5	5.8	2.6	4.4	7.8	21.5	8.0	1.11	.16	3.75	.15	.27
20	17.3	13.3	.83	16.7	5.4	23	4.7	.83	.15	2.25	.15	.40
21	19.2	6.9	3.35	12.5	5.2	43	3.1	.69	.14	3.15	.15	.15
22	16.2	17.5	.43	12.2	6.0	48	2.25	.55	11.3	8.0	.14	2.2
23	9.9	19.6	36	10.5	10.0	37	1.58	.51	18.4	19.5	.14	15.8
24	21.5	8.9	9.2	6.2	10.9	47	1.25	.47	13.0	38.5	.14	10.5
25	13.8	6.7	2.8	8.5	15.5	32	1.18	.39	17.9	11.2	.90	7.9
26	19.0	5.6	1.25	15.3	19.5	22.5	1.62	.39	17.8	31.5	1.04	3.9
27	26	4.8	32.5	26.5	10.7	14.4	1.10	.39	12.5	8.7	15.2	.39
28	37	4.3	17.0	36	30.5	23.5	3.0	.39	24.5	6.2	4.9	.16
29	21.5	5.6	3.55	42	25.5	35	.69	-	30	2.8	6.4	.16
30	17.5	6.9	22	19.2	10.0	38	.55	-	34.5	2.15	1.40	.16
31	25.5	9.4	-	10.6	-	19.9	.62	-	23	-	.69	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	48	5.0	19.2	29.7	596	1,830
August	34.5	3.9	10.7	16.6	331	1,020
September	36	.43	6.24	9.65	187	574
October	42	1.36	10.2	15.8	315	966
November	30.5	1.80	11.3	17.5	339	1,040
December	48	5.2	25.8	39.9	799	2,450
Calendar year 1948	48	.43	11.9	18.4	4,370	13,410
January	20.5	.55	6.99	10.8	217	665
February	27.5	.35	2.85	4.41	79.9	245
March	36.5	.14	8.87	13.7	275	844
April	38.5	2.15	11.0	17.0	330	1,010
May	15.2	.14	1.57	2.43	48.6	149
June	15.8	.15	2.20	3.40	66.0	203
Fiscal year 1948-49	48	.14	9.82	15.2	3,580	11,000

Koolau ditch at Haipuaena, near Huelo

Location.--Parshall flume, lat. 20°51'15", long. 156°11'15", 1,000 feet upstream from intake at Puohokamoa Stream, 3½ miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Records available.--April 1932 to June 1949.

Average discharge.--17 years, 80.0 million gallons a day (124 second-feet).

Extremes.--Maximum discharge during year, 218 million gallons a day (337 second-feet) Sept. 30 (gage height, 5.16 feet); minimum, 15.6 million gallons a day (24.1 second-feet) Feb. 8.
1932-49: Maximum discharge, 226 million gallons a day (350 second-feet) Nov. 23, 1941 (gage height, 5.32 feet); no flow at times.

Remarks.--Records excellent. Water used for domestic supply and irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	61	100	54	179	173	181	119	35.5	26.5	162	63	37
2	81	86	82	145	126	166	133	34	25	162	59	50
3	95	83	52	115	94	134	125	38.5	25	120	52	75
4	121	63	46	72	76	106	99	35	25	73	77	57
5	183	55	41	72	72	82	89	32.5	23.5	123	64	88
6	187	107	39	55	59	106	85	31	23.5	76	78	50
7	186	66	44	52	55	76	80	31	22	80	52	39
8	165	52	39	44	156	131	86	108	32.5	85	44	35.5
9	100	48	50	41	135	183	104	76	39	59	42	32.5
10	80	44	45	41	110	183	85	52	29.5	52	41	29.5
11	137	56	57	86	140	169	82	42	35.5	109	39	68
12	98	55	60	70	149	190	65	39	43	163	35.5	107
13	83	56	42	72	95	171	63	52	183	83	39	42
14	68	44	37	52	84	112	59	68	140	63	35.5	35.5
15	58	96	35.5	41	74	127	59	84	94	74	37	32.5
16	55	179	34	39	158	146	59	90	59	138	38.5	31
17	165	123	32.5	41	124	124	91	63	44	72	31	28
18	183	68	32.5	37	91	134	70	48	37	55	29.5	29.5
19	164	63	44	78	67	116	63	42	34	52	28	28
20	101	127	32.5	83	59	118	59	39	31	48	26.5	26.5
21	94	67	38	144	55	169	59	35.5	29.5	50	26.5	25
22	76	144	31	151	52	176	57	34	86	103	25	36.5
23	67	170	153	162	75	152	52	32.5	156	153	23.5	114
24	111	90	74	120	92	176	50	31	134	190	23.5	67
25	84	67	44	120	91	149	48	29.5	113	149	38.5	40
26	103	59	39	178	158	137	44	29.5	139	183	43	29.5
27	150	52	131	176	135	122	45	29.5	122	154	150	26.5
28	163	52	155	188	180	146	48	29.5	160	123	105	25
29	131	54	78	185	169	158	41	-	176	80	132	25
30	99	78	120	178	153	155	39	-	183	76	52	25
31	142	103	-	162	-	134	39	-	176	-	41	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	187	55	116	179	3,590	11,020
August	179	44	80.9	125	2,510	7,690
September	155	31	58.7	90.8	1,760	5,410
October	188	37	103	159	3,180	9,760
November	180	52	109	169	3,260	10,000
December	190	76	143	221	4,430	13,590
Calendar year 1948	190	3.45	98.0	152	35,870	110,100
January	133	39	70.9	110	2,200	6,740
February	108	29.5	46.1	71.3	1,290	3,960
March	183	22	78.9	122	2,450	7,510
April	190	48	104	161	3,110	9,540
May	150	23.5	50.7	78.4	1,570	4,820
June	114	25	44.5	68.9	1,340	4,100
Fiscal year 1948-49	190	22	84.0	130	30,690	94,140

Puohokamoa Stream near Huelo

Location.--Masonry dam control, lat. 20°51'20", long. 156°11'25", 650 feet upstream from Spreckels ditch inflow and trail crossing, 3.2 miles (corrected) southeast of Kailua, and 4.4 miles southeast of Huelo. Datum of gage is 1,322.04 feet above mean sea level (East Maui Irrigation Co. bench mark).

Drainage area.--2.6 square miles.

Records available.--December 1910 to June 1949.

Average discharge.--32 years (1917-49), 21.5 million gallons a day (33.3 second-feet).

Extremes.--Maximum discharge during year, 1,120 million gallons a day (1,730 second-feet) Sept. 27 (gage height, 6.47 feet), from rating curve extended above 400 million gallons a day by logarithmic plotting; minimum, 1.3 million gallons a day (2.0 second-feet) Mar. 7, 8.
1910-49: Maximum discharge, 1,600 million gallons a day (2,480 second-feet) Aug. 12, 1940 (gage height, 7.81 feet), from rating curve extended above 400 million gallons a day by logarithmic plotting; minimum, 0.1 million gallons a day (0.2 second-foot) Nov. 17, 1929.

Remarks.--Records good except those for period of no gage-height record, which are poor. Kula pipe line diverts small amount of water above station, at altitude 4,300 feet, for domestic supply.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.8	14.8	6.5	66	30	53	25	3.0	1.6	30.5	7.4	3.2
2	11.2	10.3	9.9	19.0	15.5	24	52	2.7	1.6	24	7.2	5.1
3	15.4	10.8	5.6	14.8	11.4	16.9	44	3.7	1.6	14.2	5.5	9.4
4	25.5	10.8	4.6	8.9	9.2	12.3	17.6	2.9	1.5	9.1	11.2	6.2
5	60	7.0	4.1	7.8	8.2	10.4	13.8	3.0	1.4	19.0	8.8	8.8
6	74	16.3	3.9	6.1	7.0	13.2	11.6	2.4	1.4	10.4	8.6	4.8
7	64	11.2	4.6	5.3	6.1	9.6	10.5	2.3	1.4	11.2	5.2	3.4
8	26.5	6.7	3.5	4.8	38.5	22.5	13.1	59	2.3	13.6	4.3	2.9
9	13.2	6.4	4.5	4.3	12.6	89	22	10.4	4.5	8.4	3.9	2.6
10	10.7	5.3	4.3	4.6	14.3	88	11.2	4.8	2.4	6.6	3.7	2.4
11	52	6.1	5.1	13.7	45	29.5	22.5	3.7	5.9	23	3.4	10.0
12	15.1	6.1	5.8	8.8	22	83	12.5	3.2	7.5	47	3.0	15.1
13	12.8	6.1	3.5	7.8	10.7	96	8.4	4.8	151	12.8	3.7	4.1
14	10.7	4.6	2.7	5.6	10.3	48	7.2	15.1	13.9	8.7	3.0	2.9
15	10.2	98	2.7	4.3	8.4	35	6.6	13.7	10.2	11.8	4.8	2.7
16	8.5	a60	2.4	4.3	31	60	6.3	18.5	6.2	24.5	5.0	2.3
17	63	a12	2.2	4.3	19.1	36	28	6.3	4.3	9.1	2.9	2.3
18	67	a8.6	2.2	3.7	14.0	40	10.0	4.5	3.7	6.9	2.6	2.6
19	34.5	a7.0	3.4	7.9	8.9	31	7.7	3.9	2.6	6.0	2.4	2.2
20	16.8	a22	2.2	35	7.0	35.5	6.3	3.4	2.2	5.2	2.3	2.0
21	14.9	a9.0	3.6	26	6.4	94	5.5	3.0	2.2	5.0	2.2	1.9
22	12.7	a29	2.1	24.5	7.0	137	5.0	2.9	12.9	11.2	2.0	4.0
23	9.6	a30	54	22.5	12.1	108	4.5	2.7	24	33.5	1.9	24
24	18.6	a12	7.9	14.2	13.3	251	4.3	2.4	15.7	119	1.7	9.5
25	11.4	a8.6	4.1	19.8	36.5	64	4.1	2.2	38.5	25	3.5	6.8
26	15.6	a7.2	3.2	33	29	45	4.1	2.0	23	76	4.1	5.2
27	30	6.4	112	58	52	29	4.1	1.9	14.0	23	29	2.6
28	62	5.8	40	109	63	46	4.6	2.0	38	17.4	12.5	2.3
29	20.5	5.6	8.4	88	46	83	3.7	-	55	10.9	15.1	2.0
30	14.5	9.0	74	46	16.2	71	3.2	-	94	9.1	5.4	2.0
31	25	15.5	-	28	-	45	3.2	-	34.5	-	3.9	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	74	8.5	27.0	41.8	836	2,560
August	98	4.6	15.1	23.4	468	1,440
September	112	2.1	13.1	20.3	393	1,210
October	109	3.7	22.8	35.3	706	2,170
November	63	6.1	20.3	31.4	609	1,870
December	251	9.6	58.3	90.2	1,810	5,540
Calendar year 1948	521	2.1	30.5	47.2	11,180	34,280
January	52	3.2	12.3	19.0	383	1,170
February	59	1.9	6.80	10.5	190	584
March	151	1.4	18.7	28.9	579	1,780
April	119	5.0	21.1	32.6	632	1,940
May	29	1.7	5.81	8.99	180	553
June	24	1.9	5.18	8.01	155	477
Fiscal year 1948-49	251	1.4	19.0	29.4	6,940	21,290

Peak discharge (base, 750 m.g.d.).--Sept. 27 (10 p.m.) 1,120 m.g.d. (1,730 sec.-ft.). a No gage-height record; discharge computed on basis of records for Kailua and Nailiilihaele Streams.

Manuel Luis ditch at Puohokamoa Gulch, near Huelo

Location.--Sharp-crested weir, lat. 20°51'50", long. 156°11'00", in Puohokamoa Gulch at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.1 miles west of Keanae, 3 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Records available.--December 1917 to June 1949.

Average discharge.--30 years (1918-24, 1925-49), 5.89 million gallons a day (9.11 second-feet).

Extremes.--Maximum discharge during year, 72 million gallons a day (111 second-feet) Sept. 27 (gage height, 3.15 feet); minimum, 0.25 million gallons a day (0.39 second-foot) May 23-25.

1917-49: Maximum discharge, 116 million gallons a day (179 second-feet) Jan. 14, 1923 (gage height, 4.93 feet), from rating curve computed from 10 to 75 million gallons a day and extended above; no flow Jan. 8, 1937, Oct. 2-5, 1939.

Remarks.--Records excellent except those for period of no gage-height record, which are fair. Ditch is extension of Center ditch and picks up water at altitude of 500 feet from streams between the Kolea and the Waiakamoi. Water used for irrigation is central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.4	2.55	1.33	6.8	4.0	20.5	6.0	0.74	0.45	12	1.70	0.93
2	14.5	2.1	2.05	1.27	2.25	4.1	17.3	.56	.45	9.0	1.46	1.31
3	15.1	1.89	1.23	1.00	1.80	3.45	11.4	1.01	.45	5.4	1.38	1.08
4	15.1	1.80	1.00	.89	1.46	3.0	3.55	.93	.39	3.3	1.48	1.15
5	26.5	1.38	.85	1.08	1.38	2.65	3.3	.85	.39	5.4	1.31	1.71
6	27	2.85	.85	.85	1.23	2.65	3.1	.51	.34	3.7	2.05	.93
7	21.5	1.77	1.23	.85	1.31	2.25	2.75	.45	.28	3.8	1.08	.68
8	7.2	1.23	.85	.79	11.5	4.4	5.4	28.5	1.2	3.9	.85	.62
9	4.4	1.23	1.23	.68	2.4	26.5	5.4	3.05	2.0	2.6	.79	.56
10	3.25	1.08	1.12	.74	2.4	23.5	3.0	2.1	.74	1.8	.74	.51
11	19.8	1.36	1.23	1.48	14.7	5.1	5.2	1.31	5.0	8.0	.74	4.4
12	3.7	1.15	1.08	1.15	7.8	26.5	3.3	.85	4.5	15	.62	2.6
13	2.5	1.15	.79	.85	3.45	28	2.55	1.46	40	4.0	.74	.79
14	1.94	.85	.68	1.14	3.3	8.7	2.25	4.5	5.5	2.7	.68	.68
15	2.0	19.1	.62	.74	2.75	5.9	2.1	2.25	3.8	3.0	.88	.62
16	1.38	31	.56	.62	5.1	15.4	1.99	3.7	2.8	6.0	.85	.56
17	14.7	2.6	.51	.74	7.1	6.8	12.4	1.61	1.2	2.5	.56	.56
18	13.3	1.99	.45	.56	4.2	7.2	3.3	1.38	.45	2.2	.45	.74
19	4.0	1.53	.97	2.05	3.2	5.3	2.75	1.23	.38	1.9	.39	.62
20	6.3	3.6	.51	17.2	2.65	8.9	2.15	1.00	.36	1.3	.34	.79
21	2.85	1.70	.70	2.3	2.55	32	1.99	.74	.34	1.61	.28	.51
22	3.2	5.6	.45	2.65	2.55	42	1.80	.68	3.0	3.25	.28	.98
23	1.89	7.1	17.3	2.35	3.3	28	1.61	.62	7.0	17.3	.25	3.75
24	8.2	2.35	1.64	2.0	3.6	64	1.53	.62	5.2	47	.25	2.7
25	3.35	1.89	.93	4.5	13.1	25	1.46	.56	7.0	5.7	1.77	1.70
26	4.4	1.61	.74	9.0	12.8	12.7	1.53	.51	7.0	30.5	1.35	1.31
27	3.95	1.46	24.5	17.4	15.9	5.6	1.46	.51	5.0	4.3	19.1	.79
28	14.9	1.46	17.3	32.5	19.5	15.7	1.70	.51	18	2.9	2.95	.51
29	3.55	1.35	1.90	27.5	15.1	31.5	1.23	-	28	2.25	4.3	.39
30	3.0	1.82	22.5	9.3	4.0	23	1.00	-	40	1.99	1.46	.34
31	3.5	1.91	-	3.55	-	10.1	1.00	-	15	-	1.08	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	27	1.38	8.66	13.4	268	824
August	31	.85	3.56	5.51	110	339
September	24.5	.45	3.57	5.52	107	329
October	32.5	.56	4.98	7.71	155	474
November	19.5	1.23	5.88	9.10	176	541
December	64	2.25	16.1	24.9	500	1,540
Calendar year 1948	68	.45	8.64	13.4	3,160	9,710
January	17.3	1.00	3.73	5.77	116	354
February	28.5	.45	2.24	3.47	62.7	193
March	40	.28	6.65	10.3	206	633
April	47	1.3	7.14	11.0	214	658
May	19.1	.25	1.68	2.60	52.2	160
June	4.4	.34	1.16	1.79	34.8	107
Fiscal year 1948-49	64	.25	5.49	8.49	2,000	6,150

Note.--No gage-height record Mar. 7 to Apr. 20; discharge computed on basis of records for stations on nearby ditches.

Waiakamoi Stream below reservoir at Kula pipe-line intake, near Olinda

Location.--Concrete dam control, lat. 20°48'40", long. 156°13'55", on left bank of Waiakamoi Reservoir, 3 miles east of Olinda, and 4.7 miles south of Kailua. Altitude of gage, 4,250 feet (from topographic map).

Records available.--July 1945 to June 1949.

Extremes.--Maximum discharge during year, 231 million gallons a day (357 second-feet) Jan. 17 (gage height, 20.25 feet), from rating curve computed from broad-crested weir formula; no flow for many days.
1945-49: Maximum discharge, 2,350 million gallons a day (3,640 second-feet) Jan. 26, 1948 (gage height, 25.3 feet, from floodmarks), from rating curve computed from broad-crested weir formula; no flow for many days.

Remarks.--Records fair.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

17.5	0	17.8	6.8	18.2	24.5
17.6	1.45	17.9	10.5	18.5	42
17.7	3.55	18.0	14.8	18.9	72

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0	5.8	6.1	10.0	4.1	0	0	5.4		0
2	0	0	0	2.4	2.0	3.8	9.0	0	0	4.4		0
3	0	0	0	1.15	4.8	2.4	7.3	0	0	1.83		0
4	0	0	0	0	0	0	3.55	0	0	0		0
5	0	0	0	0	0	0	.51	0	0	1.26		0
6	0	0	0	0	0	0	0	0	0	.58		0
7	0	0	0	0	0	0	0	0	0	1.52		0
8	0	0	0	0	16.2	2.0	0	6.6	0	2.2		0
9	0	0	0	0	4.4	15.2	3.65	3.55	0	.20		0
10	0	0	0	0	2.4	14.3	1.80	.34	0	0		0
11	0	0	0	0	4.1	4.7	3.3	0	0	0		0
12	0	0	.12	0	2.2	15.4	2.85	0	0	2.2		.64
13	0	0	0	0	.13	23.5	1.62	0	9.0	2.2		.57
14	0	0	0	0	.11	8.6	.08	0	3.1	.21		0
15	0	17.3	0	0	0	6.0	0	.34	2.2	0		0
16	0	6.8	0	0	5.6	9.7	0	1.15	.54	1.35		0
17	6.3	1.30	0	0	4.1	4.4	37.5	0	0	.05		0
18	5.3	.19	0	0	3.55	4.4	4.4	0	0	0		0
19	.65	0	0	0	1.58	3.8	2.0	0	0	0		0
20	0	.96	0	0	0	3.55	.22	0	0	0		0
21	0	.33	0	3.25	0	9.8	1.30	0	0	0		0
22	0	2.4	0	3.35	2.1	18.4	.47	0	0	0		0
23	0	2.65	1.69	3.5	2.85	25	0	0	2.45	0		.10
24	0	1.10	.47	1.45	2.0	90	0	0	2.85	10.8		.80
25	0	0	0	1.79	.60	25	0	0	5.2	4.7		1.45
26	0	0	0	3.25	3.3	10.5	0	0	4.3	8.0		.65
27	0	0	2.1	7.5	7.4	6.8	0	0	.08	2.65		0
28	0	0	4.0	15.8	18.6	7.5	.97	0	2.4	.62		0
29	0	0	.08	12.1	11.3	15.9	1.45	-	6.1	0		0
30	0	0	2.65	5.2	3.8	18.4	.05	-	11.0	0		0
31	0	0	-	3.1	-	8.6	0	-	5.8	-		-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.3	0	0.395	0.611	12.2	38
August	17.3	0	1.07	1.66	33.0	101
September	4.0	0	.370	.572	11.1	34
October	15.8	0	2.25	3.48	69.6	214
November	18.6	0	3.64	5.63	109	335
December	90	0	11.9	18.4	368	1,130
Calendar year 1948	385	0	5.14	7.95	1,880	5,780
January	37.5	0	2.78	4.30	86.1	264
February	6.6	0	.428	.662	12.0	37
March	11.0	0	1.77	2.74	55.0	169
April	10.8	0	1.67	2.58	50.2	154
May	0	0	0	0	0	0
June	1.45	0	.140	.217	4.21	13
Fiscal year 1948-49	90	0	2.22	3.43	811	2,490

Waiakamoi Stream above Wailoa ditch, near Huelo

Location.--Lat. 20°51'45", long. 156°11'55", 500 feet upstream from intake of Wailoa ditch, a quarter of a mile upstream from Spreckels ditch trail, 2.5 miles southeast of Kailua, and 3.8 miles southeast of Huelo. Datum of gage is 1,293.59 feet above mean sea level.
Drainage area.--4.4 square miles.
Records available.--January 1922 to June 1949.
Average discharge.--27 years, 16.5 million gallons a day (25.5 second-feet).
Extremes.--Maximum discharge during year, 1,270 million gallons a day (1,960 second-feet) Aug. 15 (gage height, 6.48 feet), from rating curve extended above 370 million gallons a day on basis of velocity-area studies; minimum, 0.48 million gallons a day (0.74 second-foot) May 25.
1922-49: Maximum discharge, 7,040 million gallons a day, revised (10,900 second-feet) Jan. 26, 1948 (gage height, 12.76 feet), from rating curve extended above 370 million gallons a day on basis of velocity-area studies; minimum, 0.16 million gallons a day (0.25 second-foot) Feb. 11, 1945.
Revisions.--The Maximum discharge for the fiscal year 1947-48 has been revised to 7,040 million gallons a day (10,900 second-feet) Jan. 26, 1948 (gage height, 12.76 feet), superseding figure published in Water-Supply Paper 1125.
Remarks.--Records good except those for period of no gage-height record, which are fair. Haleakala Ranch and Kula pipe lines divert small quantities of water above station. Water used for irrigation in central Maui.
Revisions (fiscal years).--W 615: 1922-24. W 740: 1922-31(M).

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.7	0.48	1.5	6.3	3.0	102
.9	1.00	1.8	14.4	3.5	175
1.1	1.70	2.1	27	4.0	274
1.3	3.2	2.5	52	4.5	400

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	10.5	3.85	52	28.5	45	15.5	1.66	0.76	28.5	3.85	1.43
2	5.9	6.3	5.1	12.5	11.6	15.3	38	1.54	.60	20	3.4	1.91
3	8.4	6.5	3.3	8.1	6.8	9.8	36.5	1.70	.60	9.2	3.25	4.5
4	12.6	7.2	2.55	4.7	5.1	6.0	9.9	1.46	.83	5.6	5.0	3.8
5	47	4.3	2.25	4.1	4.4	5.2	7.2	1.09	.76	12.2	6.1	3.95
6	61	8.1	2.1	3.3	3.7	6.5	5.8	.84	1.10	6.3	5.2	3.2
7	60	6.9	2.4	2.85	3.2	4.9	5.1	.73	1.12	6.8	2.55	1.54
8	19.5	4.0	1.40	2.55	51	14.1	6.8	50	1.10	8.1	2.1	1.25
9	8.8	3.2	2.4	2.25	9.5	97	15.8	10.5	4.1	5.2	1.85	1.09
10	6.1	3.05	2.85	2.4	8.8	82	6.8	3.3	2.0	4.0	1.70	.95
11	43	3.6	3.25	8.0	24	22.5	14.7	2.2	4.7	14.1	1.66	4.5
12	12.4	3.7	4.9	5.0	12.0	81	8.9	1.90	11.9	30	1.32	9.6
13	6.8	3.4	3.05	4.1	5.8	107	4.9	2.45	112	8.5	1.46	3.3
14	5.6	2.55	2.2	3.2	5.8	40	4.0	10.5	10.0	5.1	1.43	2.3
15	5.2	127	1.40	2.2	4.5	31	3.6	9.1	6.1	5.6	1.43	3.1
16	4.7	50	1.22	2.1	25	56	3.3	10.6	4.2	14.6	2.35	2.05
17	71	8.9	1.06	2.15	12.7	23.5	64	4.2	2.65	5.4	1.19	1.00
18	70	6.3	1.00	1.25	10.9	29.5	10.8	2.75	2.05	4.0	a.98	1.00
19	22.5	4.7	1.42	3.45	5.2	24	5.4	2.25	1.40	3.45	a.87	1.06
20	10.1	14.6	.95	22	4.0	20	3.85	2.0	1.22	2.75	a.78	1.03
21	7.4	5.9	1.44	22.5	3.6	77	3.05	1.80	.98	2.25	a.73	1.14
22	6.5	23.5	.98	20.5	4.3	123	2.75	1.66	8.5	4.4	a.65	1.18
23	4.9	24	41	22	7.8	121	2.45	1.50	19.6	18.9	a.58	15.9
24	11.3	8.5	7.2	10.5	8.0	301	2.4	1.58	12.2	91	.55	6.7
25	6.3	5.2	2.85	14.3	18.3	78	2.3	.91	33	17.8	1.30	8.0
26	9.1	4.1	2.25	23.5	25.5	41	2.25	.73	22.5	67	1.58	5.6
27	17.9	3.7	73	59	52	23	2.2	.81	8.4	14.1	12.0	2.45
28	36.5	3.3	41	115	67	37.5	2.6	.90	21.5	9.5	6.6	2.05
29	13.4	3.2	5.4	91	46	81	1.78	-	44	5.6	8.0	1.80
30	9.1	4.2	48	36.5	11.2	79	1.90	-	8.3	4.7	3.7	1.70
31	21	8.3	-	20.5	-	36.5	1.85	-	30.5	-	2.45	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	71	4.7	20.4	31.6	631	1,940
August	127	2.55	12.2	18.9	379	1,160
September	73	.95	9.06	14.0	272	834
October	115	1.25	18.8	29.1	584	1,790
November	67	3.2	16.2	25.1	486	1,490
December	301	4.9	55.4	85.7	1,720	5,270
Calendar year 1948	1,590	.91	29.7	46.0	10,870	33,330
January	64	1.78	9.56	14.8	296	910
February	50	.73	4.67	7.23	131	401
March	112	.60	12.2	18.9	379	1,160
April	91	2.25	14.5	22.4	435	1,330
May	12.0	.55	2.79	4.32	86.6	266
June	15.9	.95	3.30	5.11	99.1	304
Fiscal year 1948-49	301	.55	15.1	23.4	5,500	16,860

Peak discharge (base, 900 m.g.d.).--Aug. 15 (6 p.m.) 1,270 m.g.d. (1,960 sec.-ft.); Sept. 27 (10:30 p.m.) 1,050 m.g.d. (1,620 sec.-ft.).
a No gage-height record; discharge computed on basis of records for nearby streams.

Alo Stream near Huelo

Location.--Lat. 20°51'50", long. 156°11'45", just upstream from Spreckels ditch inflow and trail crossing, 2.5 miles southeast of Kailua, and 3.8 miles southeast of Huelo. Datum of gage is 1,248.38 feet above mean sea level.

Drainage area.--0.2 square mile.

Records available.--December 1910 to June 1949.

Average discharge.--38 years (1911-49), 4.90 million gallons a day (7.58 second-feet).

Extremes.--Maximum discharge during year, 415 million gallons a day (642 second-feet) Sept. 27 (gage height, 3.88 feet), from rating curve extended above 130 million gallons a day by logarithmic plotting; minimum, 0.35 million gallons a day (0.54 second-foot) Mar. 8.

1910-49: Maximum discharge, 1,600 million gallons a day (2,480 second-feet) Nov. 18, 1930 (gage height, 6.90 feet), from rating curve extended above 130 million gallons a day; minimum, 0.2 million gallons a day (0.3 second-foot) Nov. 22, 23, 1932.

Remarks.--Records good. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.35	1.0	3.12	1.5	18.5
.6	.62	1.1	4.60	1.6	24.5
.7	.97	1.2	6.70	1.9	46
.8	1.45	1.3	9.60		
.9	2.10	1.4	13.5		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	1.90	1.52	7.1	4.8	10.6	6.7	0.51	0.48	4.7	1.35	1.07
2	3.8	1.52	2.7	3.45	2.4	4.6	13.4	.48	.46	4.1	1.21	2.45
3	4.6	1.37	1.21	2.55	1.97	2.9	5.0	1.06	.48	2.45	1.07	1.63
4	3.8	1.31	.94	1.64	1.58	2.2	2.9	.63	.43	1.74	1.02	1.81
5	8.1	1.07	.86	1.62	1.45	2.1	2.3	.51	.43	3.65	.97	4.6
6	6.9	4.3	.86	1.11	1.21	2.45	1.84	.46	.40	1.58	3.7	1.54
7	8.1	1.56	1.27	1.07	1.07	1.83	1.52	.46	.38	2:2	.97	1.07
8	5.2	1.07	.80	.90	7.3	5.3	5.1	17.6	.76	3.35	.83	.90
9	2.3	1.07	1.75	.83	2.45	11.6	5.3	1.56	.76	1.40	.76	.83
10	1.84	.90	1.00	.83	5.1	13.7	1.63	.86	.69	1.16	.72	.76
11	14.0	1.31	1.27	2.8	12.8	5.1	7.4	.69	1.30	7.0	.80	5.3
12	2.6	.90	.94	1.78	7.2	11.3	2.25	.66	3.45	12.7	.66	3.35
13	3.0	1.70	.76	1.16	2.4	9.0	1.52	1.07	36	2.25	.87	.97
14	2.05	.86	.69	1.44	2.25	7.6	1.21	3.25	2.15	1.71	.72	.86
15	2.75	21	.66	.83	2.15	4.5	1.11	2.1	1.50	3.2	1.60	.76
16	1.71	14.2	.62	.76	7.0	9.9	1.02	5.6	1.07	4.9	1.03	.69
17	9.9	2.15	.57	.86	7.1	7.7	3.1	1.16	.80	1.52	.62	.69
18	10.7	1.71	.57	.76	2.75	8.3	1.69	.90	.72	1.21	.57	.72
19	4.9	1.26	1.41	3.4	1.90	4.1	1.30	.83	.66	1.11	.54	.62
20	3.35	5.2	.62	6.2	1.58	9.7	.94	.80	.59	.97	.54	.57
21	3.5	1.44	.77	2.3	1.31	22	.86	.72	.57	1.21	.51	..54
22	3.7	6.8	.57	3.7	1.23	25.5	.80	.69	3.75	4.7	.48	1.56
23	1.97	8.4	12.8	3.0	2.9	13.0	.76	.62	3.7	13.4	.46	3.5
24	10.2	2.3	1.27	2.85	3.9	53	.72	.59	2.9	23	.43	1.91
25	2.75	1.65	.86	4.1	27.5	8.2	.69	.57	11.2	3.45	2.1	.72
26	3.5	1.35	.76	7.9	9.3	7.0	.62	.57	4.5	13.7	1.57	.62
27	3.8	1.31	27	9.5	13.3	5.5	.74	.54	4.7	4.7	15.7	.59
28	9.8	1.16	7.4	10.3	5.6	10.3	.74	.54	11.8	3.05	4.9	.57
29	3.55	1.38	1.81	10.1	7.0	13.0	.59	-	14.3	1.90	7.4	.57
30	2.4	2.8	13.3	6.4	3.05	9.6	.57	-	15.9	1.78	1.74	.57
31	3.65	2.85	-	4.5	-	5.4	.54	-	8.6	-	1.21	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14.0	1.71	4.87	7.54	151	463
August	21	.86	3.15	4.87	97.8	300
September	27	.57	2.92	4.52	87.6	269
October	10.3	.76	3.41	5.28	106	325
November	27.5	1.07	5.05	7.81	152	465
December	53	1.83	9.90	15.3	307	942
Calendar year 1948	91	.57	5.75	8.90	2,110	6,460
January	13.4	.54	2.35	3.64	72.9	224
February	17.6	.46	1.64	2.54	46.0	141
March	36	.38	4.37	6.76	135	416
April	23	.97	4.46	6.90	134	411
May	15.7	.43	1.84	2.85	57.0	175
June	5.3	.54	1.41	2.18	42.3	130
Fiscal year 1948-49	53	.38	3.80	5.88	1,390	4,260

Peak discharge (base, 250 m.g.d.).--Aug. 15 (6 p.m.) 330 m.g.d. (511 sec.-ft.; Sept. 27 (10 p.m.) 415 m.g.d. (642 sec.-ft.).

Kaaiea Stream near Huelo

Location.--Concrete weir control, lat. 20°52'05", long. 156°12'15", 700 feet upstream from Hamakua ditch trail crossing, 2 miles southeast of Kailua, 3¼ miles southeast of Huelo, and 3½ miles west of Keanae.

Drainage area.--0.5 square mile.

Records available.--December 1921 to June 1949.

Average discharge.--27 years (1922-49), 4.67 million gallons a day (7.23 second-feet).

Extremes.--Maximum discharge during year, 340 million gallons a day (526 second-feet) Sept. 27 (gage height, 3.70 feet), from rating curve extended above 130 million gallons a day; minimum, 0.36 million gallons a day (0.56 second-foot) Mar. 7, 8.
1921-49: Maximum discharge, 2,300 million gallons a day (3,560 second-feet) Nov. 18, 1930 (gage height, 7.93 feet, site and datum then in use), from rating curve extended above 50 million gallons a day; minimum, 0.22 million gallons a day (0.34 second-foot) June 1, 1945.

Remarks.--Records good except those for period of no gage-height record, which are fair. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.27	0.6	4.05	1.0	15.3
.3	.63	.7	6.1	1.2	24.5
.4	1.34	.8	8.65	1.4	36
.5	2.45	.9	11.7	1.6	49

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	a4.0	3.7	1.43	8.3	5.1	11.2	5.9	0.63	0.50	5.3	1.53	1.25
2	a4.5	1.73	2.7	3.5	2.75	5.0	12.6	.58	.46	4.1	1.34	2.3
3	4.9	1.53	1.43	2.9	2.2	3.5	5.9	.98	.46	2.45	1.25	1.95
4	4.8	1.73	1.17	1.84	1.73	2.45	3.2	.63	.42	1.73	1.38	1.84
5	9.4	1.25	1.01	1.73	1.63	1.95	2.3	.58	.42	3.6	1.34	4.3
6	8.9	4.2	.94	1.25	1.34	2.75	1.84	.54	.39	1.73	3.7	1.73
7	8.8	1.84	1.25	1.17	1.17	1.84	1.73	.54	.39	2.2	1.25	1.25
8	5.5	1.25	.94	.94	8.6	4.8	3.65	15.0	.75	3.8	1.01	1.09
9	2.45	1.25	1.56	.94	2.95	12.6	4.1	2.05	.80	1.63	.94	.94
10	1.84	1.01	1.17	.94	4.4	14.0	1.95	1.09	.63	1.34	.87	.80
11	12.4	1.34	1.34	3.05	12.1	5.1	9.5	.94	1.36	6.3	.94	4.2
12	2.9	1.09	1.25	2.05	6.8	11.9	2.75	.80	1.85	14.1	.74	4.7
13	2.75	1.56	.94	1.63	2.9	10.0	1.84	1.25	35.5	2.75	.92	1.25
14	2.2	1.09	.80	1.58	2.3	8.2	1.63	3.35	2.55	1.84	.87	.94
15	2.6	20.5	.74	1.09	1.81	5.2	1.34	2.7	1.73	3.1	1.03	.87
16	1.84	12.4	.74	.94	6.9	9.7	1.34	5.7	1.34	4.9	1.24	.80
17	9.8	2.45	.63	1.01	5.8	7.4	2.9	1.53	.94	1.63	.74	.68
18	11.6	1.84	.63	.87	2.9	8.9	1.84	1.09	.80	1.34	.63	.80
19	6.1	1.53	1.41	3.2	1.95	5.1	1.53	.94	.74	1.25	.58	.63
20	3.85	5.3	.74	6.3	1.63	8.9	1.25	.87	.63	1.17	.58	.58
21	3.85	1.73	.94	3.0	1.34	22.5	1.09	.80	.58	1.25	.54	.58
22	3.7	6.8	.63	3.7	1.34	25	1.01	.74	3.5	4.3	.50	1.31
23	2.2	8.4	12.4	3.2	3.15	12.3	.94	.63	4.4	11.5	.46	4.1
24	7.9	2.6	1.68	2.6	3.9	51	.87	.63	3.6	22.5	.46	2.25
25	3.05	1.84	1.09	3.8	18.2	9.2	.80	.54	10.2	3.9	1.23	.80
26	3.35	1.43	.94	7.9	9.8	7.0	.74	.54	5.7	14.1	1.34	.63
27	5.0	1.34	23.5	9.3	11.5	5.4	.80	.54	4.8	5.2	12.4	.63
28	11.8	1.25	7.6	11.9	7.2	10.2	.80	.54	10.6	3.8	4.7	.58
29	4.1	1.34	2.45	11.1	7.4	13.3	.68	-	14.9	2.05	7.0	.54
30	2.75	2.4	14.3	7.0	3.5	10.5	.68	-	17.8	1.84	1.95	.54
31	4.0	3.45	-	4.8	-	6.3	.63	-	8.2	-	1.34	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	12.4	1.84	5.25	8.12	163	500
August	20.5	1.01	3.26	5.04	101	310
September	23.5	.63	2.94	4.55	88.4	271
October	11.9	.87	3.66	5.66	114	348
November	18.2	1.17	4.81	7.44	144	443
December	51	1.84	10.1	15.6	313	961
Calendar year 1948	87	.60	5.68	8.79	2,080	6,380
January	12.6	.63	2.52	3.90	78.1	240
February	15.0	.54	1.67	2.58	46.8	143
March	35.5	.39	4.42	6.84	137	420
April	22.5	1.17	4.56	7.06	137	420
May	12.4	.46	1.77	2.74	54.8	168
June	4.7	.54	1.50	2.32	44.9	138
Fiscal year 1948-49	51	.39	3.89	6.02	1,420	4,360

Peak discharge (base, 250 m.g.d.).--Aug. 15 (5:30 p.m.) 326 m.g.d. (504 sec.-ft.); Sept. 27 (10 p.m.) 340 m.g.d. (526 sec.-ft.).
a No gage-height record; discharge computed on basis of records for Alo and Oopuola Streams.

Oopuola Stream near Huelo

Location.--Concrete weir control, lat. 20°52'15", long. 156°12'30", between Kaaiea and NailiIilihaele Streams, 100 feet upstream from Wailoa ditch intake, 300 feet upstream from ditch trail, 1¾ miles southeast of Kailua, 3 miles (corrected) southeast of Huelo, and 3¾ miles west of Keanae.

Drainage area.--0.2 square mile.

Records available.--August 1930 to June 1949. December 1910 to June 1915 at site half a mile downstream; records not equivalent.

Average discharge.--18 years (1931-49), 1.76 million gallons a day (2.72 second-feet).

Extremes.--Maximum discharge during year, 323 million gallons a day (500 second-feet) Sept. 27 (gage height, 5.09 feet), from rating curve extended above 20 million gallons a day by test on model of station site; minimum, 0.18 million gallons a day (0.28 second-foot) Mar. 7, 8.

1930-49: Maximum discharge, 340 million gallons a day (526 second-feet) Jan. 22, 1946 (gage height, 5.54 feet), from rating curve extended above 20 million gallons a day by test on model of station site; minimum, 0.04 million gallons a day (0.06 second-foot) Oct. 29, 30, 1943, June 1, 1945.

Remarks.- Records good. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.7	0.23	2.2	5.7
1.8	.65	2.3	8.2
1.9	1.32	2.4	11.2
2.0	2.35	2.5	14.7
2.1	3.75	2.6	18.8

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.12	0.81	0.48	2.75	1.96	4.0	2.55	0.23	0.23	1.86	0.60	0.55
2	1.59	.60	1.20	1.26	.94	1.82	4.9	.23	.21	1.36	.55	1.15
3	2.2	.50	.50	1.10	.65	1.14	1.86	1.15	.23	.87	.50	.81
4	1.41	.45	.32	.65	.55	.81	1.02	.36	.21	.65	.45	.81
5	3.25	.40	.28	.65	.50	.70	.81	.25	.19	1.72	.40	1.81
6	1.80	1.50	.25	.45	.40	.87	.65	.23	.19	.70	1.80	.70
7	2.8	.60	.45	.36	.36	.70	.60	.23	.19	.95	.55	.45
8	2.05	.40	.28	.32	2.8	2.15	2.15	8.6	.53	1.65	.40	.40
9	.81	.40	.60	.28	1.27	3.2	1.63	1.04	.45	.65	.36	.40
10	.60	.32	.40	.28	1.76	5.0	.75	.60	.36	.55	.32	.36
11	6.0	.55	.55	1.58	5.1	1.61	4.8	.45	.68	3.1	.36	3.1
12	1.18	.36	.40	.87	3.3	4.2	1.17	.40	.97	4.2	.28	1.92
13	1.13	.50	.25	.55	1.02	3.45	.81	.70	12.5	1.08	.40	.60
14	.90	.36	.23	.84	.87	2.65	.65	1.92	1.16	.81	.36	.50
15	1.24	7.7	.23	.36	.60	1.66	.60	1.06	.75	.74	.39	.45
16	.70	5.1	.21	.28	2.55	3.4	.55	2.5	.55	1.73	.50	.40
17	4.4	.87	.21	.32	3.3	2.25	1.08	.65	.40	.60	.28	.36
18	6.5	.75	.21	.25	1.10	3.2	.81	.45	.32	.50	.25	.36
19	1.23	.55	.77	2.15	.75	1.59	.75	.36	.28	.45	.25	.32
20	1.18	2.5	.28	2.5	.55	3.4	.50	.32	.28	.45	.23	.28
21	1.18	.65	.23	1.01	.50	8.4	.45	.32	.25	.50	.23	.28
22	1.45	2.85	.21	1.23	.48	8.5	.40	.28	1.21	2.6	.23	.50
23	.70	3.25	6.4	1.03	1.26	3.9	.36	.28	1.38	5.5	.23	1.65
24	6.6	.94	.68	.92	1.63	21.5	.32	.25	1.01	8.1	.23	1.01
25	1.51	.65	.36	1.70	11.9	3.05	.32	.25	4.3	1.51	1.16	.25
26	1.62	.55	.32	2.7	4.2	2.55	.32	.23	2.55	4.8	.88	.23
27	1.65	.50	14.4	2.75	3.5	1.94	.32	.23	2.4	1.96	6.4	.21
28	4.0	.45	3.5	3.6	3.0	4.2	.28	.25	3.95	1.18	2.3	.21
29	1.51	.47	1.10	4.0	2.85	4.5	.25	-	4.9	.81	3.25	.19
30	.94	.94	3.95	2.65	1.33	2.8	.25	-	7.4	.75	.87	.19
31	1.53	1.10	-	1.52	-	1.95	.23	-	3.2	-	.65	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.6	0.60	2.11	3.26	65.5	201
August	7.7	.32	1.21	1.87	37.6	115
September	14.4	.21	1.31	2.03	39.2	120
October	4.0	.25	1.32	2.04	40.9	126
November	11.9	.36	2.03	3.14	61.0	187
December	21.5	.70	3.58	5.54	111	341
Calendar year 1948	35.5	.21	2.20	3.40	804	2,470
January	4.9	.23	1.04	1.61	32.1	99
February	8.6	.23	.851	1.32	23.8	73
March	12.5	.19	1.72	2.66	53.2	163
April	8.1	.45	1.74	2.69	52.3	161
May	6.4	.23	.828	1.28	25.7	79
June	3.1	.19	.682	1.06	20.4	63
Fiscal year 1948-49	21.5	.19	1.54	2.38	563	1,730

Peak discharge (base, 130 m.g.d.).--Aug. 15 (5 p.m.) 144 m.g.d. (223 sec.-ft.); Sept. 27 (10 p.m.) 323 m.g.d. (500 sec.-ft.); Nov. 25 (9 p.m.) 201 m.g.d. (311 sec.-ft.).

Nailiilihaele Stream near Huelo

Location.--Masonry dam control, lat. 20°52'30", long. 156°13'05", 200 feet upstream from Wailoa ditch intake, 700 feet upstream from New Hamakua ditch trail, 1½ miles south of Kailua, and 2½ miles southeast of Huelo.

Drainage area.--2.8 square miles.

Records available.--December 1910 to June 1918, August 1919 to June 1949.

Average discharge.--28 years (1920-24, 1925-49), 24.4 million gallons a day (37.8 second-feet).

Extremes.--Maximum discharge during year, 4,150 million gallons a day (6,420 second-feet) Sept. 27 (gage height, 8.32 feet), from rating curve extended above 130 million gallons a day by logarithmic plotting; minimum, 2.6 million gallons a day (4.0 second-feet) Mar. 7, 8.

1910-18, 1919-49: Maximum discharge, 4,750 million gallons a day (7,350 second-feet) Aug. 12, 1940 (gage height, 8.64 feet), from rating curve extended above 130 million gallons a day by logarithmic plotting; minimum, 0.45 million gallons a day (0.70 second-foot) July 14, 1920.

Remarks.--Records good. No diversions above station. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 755: 1932. W 795: 1934.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.9	2.9	2.4	19.0	3.0	73
2.0	5.0	2.5	24	3.3	120
2.1	7.7	2.6	31	3.6	181
2.2	10.8	2.7	39.5	3.9	260
2.3	14.6	2.8	50	4.2	355

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.9	15.0	8.6	37.5	29	49	28	4.4	3.55	25.5	9.6	5.8
2	14.5	12.3	12.2	15.8	17.2	27	63	4.4	3.3	22	9.2	9.3
3	18.9	11.2	8.0	15.2	14.2	20.5	35	8.3	3.3	15.0	8.3	10.4
4	22	11.2	6.6	10.2	11.9	15.5	20	4.6	3.1	11.6	9.7	9.2
5	41	9.6	6.1	9.9	11.2	13.5	16.8	4.2	2.9	19.8	9.1	13.3
6	42	18.3	5.8	8.0	9.9	16.4	14.2	3.95	2.9	11.9	14.0	8.3
7	39.5	12.2	6.6	7.4	8.9	12.3	12.7	3.75	2.75	13.5	8.0	6.4
8	24.5	9.2	5.3	6.6	33.5	22	17.1	59	4.5	17.0	6.9	5.8
9	14.6	8.9	7.7	6.1	15.1	59	22	10.7	4.8	10.8	6.1	5.3
10	12.3	8.0	6.1	6.1	17.7	70	13.1	6.6	4.2	9.6	5.8	4.8
11	67	8.6	7.2	15.0	48	26	45	5.3	7.1	21.5	5.8	13.8
12	16.0	7.7	7.0	11.1	23.5	52	14.6	4.8	8.3	40	5.0	16.3
13	14.6	8.6	5.3	9.7	13.8	50	11.6	6.9	233	13.8	6.1	7.2
14	12.9	6.9	4.6	9.0	12.7	40	10.5	13.9	12.6	10.8	5.5	5.8
15	13.7	140	4.4	6.9	10.8	30	9.6	13.4	8.9	12.4	6.0	5.0
16	11.2	46	4.2	6.1	29	44	9.2	21	7.2	19.6	7.5	4.8
17	45	12.3	3.95	6.1	23.5	35	54	8.6	5.8	10.2	5.0	4.6
18	66	10.8	3.95	5.5	15.1	41	11.6	6.9	4.8	8.9	4.4	4.6
19	32.5	9.2	6.7	13.4	11.6	30.5	9.6	6.1	4.6	8.0	4.2	4.2
20	20.5	24	4.2	26.5	10.2	39	8.6	5.5	4.2	7.4	3.95	3.95
21	18.6	10.5	4.8	16.6	9.6	103	7.7	5.0	3.75	7.4	3.95	3.75
22	17.7	30.5	3.75	17.3	9.4	142	7.2	4.8	12.8	15.1	3.75	5.9
23	13.1	33.5	36.5	16.2	15.5	72	6.9	4.6	21	28	3.55	16.4
24	30	14.3	8.6	13.1	18.3	389	6.6	4.4	16.5	109	3.55	10.5
25	15.0	11.2	5.8	17.6	130	52	6.1	4.2	51	20	5.9	5.3
26	17.7	9.9	4.8	31	47	41	5.8	3.95	23.5	49	6.0	4.4
27	30.5	9.2	208	46	84	29.5	5.8	3.95	18.0	22.5	24.5	4.2
28	68	8.6	29	62	38	49	5.8	3.95	31.5	18.5	14.9	3.95
29	21.5	8.3	10.2	55	37.5	68	5.0	-	55	12.3	20.5	3.75
30	16.4	10.9	99	32	19.0	53	4.8	-	92	11.2	8.6	3.75
31	24	15.8	-	26	-	39	4.6	-	34	-	6.6	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	68	10.9	26.2	40.5	812	2,490
August	140	6.9	17.8	27.5	553	1,700
September	208	3.75	17.8	27.5	535	1,640
October	62	5.5	18.2	28.2	565	1,730
November	130	8.9	25.8	39.9	775	2,380
December	389	12.3	55.8	86.3	1,730	5,310
Calendar year 1948	868	3.75	35.6	55.1	13,020	39,960
January	63	4.6	15.9	24.6	492	1,510
February	59	3.75	8.47	13.1	237	728
March	233	2.75	22.3	34.5	691	2,120
April	109	7.4	20.1	31.1	602	1,850
May	24.5	3.55	7.80	12.1	242	743
June	16.4	3.75	7.02	10.9	211	647
Fiscal year 1948-49	389	2.75	20.4	31.6	7,440	22,850

Peak discharge (base, 1,250 m.g.d.).--Aug. 15 (5 p.m.) 1,840 m.g.d. (2,850 sec.-ft.); Sept. 27 (9 p.m.) 4,150 m.g.d. (6,420 sec.-ft.); Dec. 24 (1 a.m.) 1,650 m.g.d. (2,550 sec.-ft.).

Kailua Stream near Huelo

Location.--Lat. 20°52'35", long. 156°13'25", just upstream from Wailoa ditch intake, 1¼ miles southwest of Kailua, and 2½ miles south of Huelo. Datum of gage is 1,252.99 feet above mean sea level.

Drainage area.--3.0 square miles.

Records available.--December 1910 to June 1918, July 1919 to June 1949.

Average discharge.--30 years (1919-49), 19.1 million gallons a day (29.6 second-feet).

Extremes.--Maximum discharge during year, 1,560 million gallons a day (2,410 second-feet) Aug. 15 (gage height, 7.04 feet), from rating curve extended above 650 million gallons a day by logarithmic plotting; minimum, 1.33 million gallons a day (2.06 second-feet) Mar. 7, 8.

1910-18, 1919-49: Maximum discharge, 4,920 million gallons a day (7,610 second-feet) Dec. 17, 1946 (gage height, 9.27 feet), from rating curve extended above 650 million gallons a day by logarithmic plotting; minimum, 0.07 million gallons a day (0.11 second-foot) June 27, 1921.

Remarks.--Records good except those above 100 million gallons a day and those for period of no gage-height record, which are fair. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.7	1.0	2.3	13.0	3.4	85
1.8	2.1	2.4	16.4	3.8	134
1.9	3.6	2.5	20	4.2	196
2.0	5.4	2.6	24.5	4.6	274
2.1	7.6	2.8	34	5.0	370
2.2	10.1	3.0	48		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.7	11.4	4.9	58	32	53	21.5	2.55	1.77	36	6.3	2.1
2	5.1	7.8	6.1	12.8	14.5	20	43	2.4	1.66	22	5.4	2.85
3	9.4	7.2	4.3	10.4	9.4	13.4	39	4.0	1.66	12.1	4.7	4.7
4	16.6	h6.5	3.6	6.7	7.8	9.4	14.4	2.55	1.55	8.4	5.3	4.3
5	53	h5.4	3.45	5.6	6.7	7.6	11.0	2.1	1.44	14.3	5.8	4.4
6	71	a9.6	3.15	4.6	5.6	9.1	9.4	2.1	1.44	8.6	6.7	3.3
7	64	a9.1	3.45	3.95	5.2	7.2	8.1	1.99	1.33	8.8	4.3	2.55
8	22	a6.3	3.0	3.45	55	14.5	8.9	56	1.88	10.7	3.6	2.25
9	9.2	4.7	3.45	3.15	13.0	111	17.7	11.1	1.99	7.2	3.3	1.99
10	6.9	4.1	3.3	3.0	10.6	102	9.1	4.7	1.88	6.1	3.15	1.88
11	43	4.1	3.45	7.4	30.5	30.5	28	3.45	3.4	15.4	3.0	6.5
12	13.3	3.95	4.1	6.1	14.1	89	11.6	3.0	2.95	44	2.85	10.5
13	7.8	3.95	3.15	5.4	8.6	127	7.8	3.45	144	10.8	2.85	3.45
14	6.5	3.45	2.7	4.3	7.6	54	6.7	9.3	12.2	7.2	2.7	2.7
15	6.1	138	2.55	3.3	6.5	36	5.8	10.6	6.3	7.0	2.7	2.25
16	5.0	56	2.4	3.0	27	66	5.4	14.1	4.7	14.6	3.15	2.1
17	65	10.2	2.25	3.0	14.3	35	30	5.6	3.6	6.9	2.4	1.99
18	81	7.4	2.25	2.7	10.4	39.5	10.7	3.95	3.15	5.6	2.1	1.99
19	32.5	6.1	2.7	4.7	7.0	31	7.2	3.3	2.7	5.0	1.99	1.77
20	13.2	15.5	2.1	6.5	5.8	28.5	5.6	3.0	2.4	4.5	1.99	1.66
21	9.6	7.2	2.25	21.5	5.2	95	4.9	2.7	2.25	4.3	1.88	1.66
22	8.4	23.5	1.99	16.3	5.0	156	4.5	2.55	7.8	6.0	1.77	1.81
23	6.7	25	37	19.5	9.6	141	4.1	2.25	20	18.6	1.66	12.6
24	11.3	9.6	7.6	11.0	11.2	344	3.95	2.1	15.6	95	1.55	5.7
25	7.2	6.9	3.6	13.2	25.5	82	3.6	2.1	38	19.0	2.1	3.7
26	8.4	5.8	2.85	28	33.5	49	3.45	1.99	31	85	1.99	5.0
27	22	5.2	107	58	64	31	3.3	1.99	12.1	22	8.2	2.7
28	46	4.7	44	138	70	44	3.45	1.88	23	16.1	5.5	2.1
29	14.4	4.5	7.2	103	52	89	3.0	-	54	9.1	8.7	1.88
30	10.1	4.9	42	47	15.0	86	2.85	-	105	7.6	3.45	1.77
31	18.4	8.1	-	27	-	50	2.7	-	40	-	2.55	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	81	4.7	22.5	34.8	698	2,140
August	138	3.45	13.7	21.2	426	1,310
September	107	1.99	10.7	16.6	322	988
October	138	2.7	20.7	32.0	641	1,970
November	70	5.0	19.4	30.0	583	1,790
December	344	7.2	66.2	102	2,050	6,290
Calendar year 1948	1,150	1.99	32.0	49.5	11,690	35,890
January	43	2.7	11.0	17.0	341	1,050
February	56	1.88	5.96	9.22	167	512
March	144	1.33	17.8	27.5	551	1,690
April	95	4.3	17.9	27.7	538	1,650
May	8.7	1.55	3.67	5.68	114	349
June	12.6	1.66	3.47	5.37	104	320
Fiscal year 1948-49	344	1.33	17.9	27.7	6,540	20,060

Peak discharge (base, 1,300 m.g.d.).--Aug. 15 (6 p.m.) 1,560 m.g.d. (2,410 sec.-ft.); Sept. 27 (10 p.m.) 1,450 m.g.d. (2,240 sec.-ft.).

a No gage-height record; discharge computed on basis of records for nearby stations.

h Computed from staff-gage reading.

Hoolawaliilii Stream near Huelo

Location.--Concrete weir control, lat. 20°53'15", long. 156°14'35", just upstream from Wailoa ditch intake, 2 miles west of Kailua, and 2 miles southwest of Huelo.

Records available.--April 1911 to June 1949.

Average discharge.--37 years (1911-15, 1916-49), 4.85 million gallons a day (7.50 second-feet).

Extremes.--Maximum discharge during year, 288 million gallons a day (446 second-feet) Sept. 27 (gage height, 4.43 feet), from rating curve extended above 90 million gallons a day by weir formula; minimum, 1.23 million gallons a day (1.90 second-feet) Sept. 22, 23, Mar. 7, June 30.

1911-49: Maximum discharge, 787 million gallons a day (1,220 second-feet) Feb. 7, 1939 (gage height, 5.42 feet), from rating curve extended above 220 million gallons a day by weir formula; minimum, 0.2 million gallons a day (0.3 second-foot) June 8, 1926.

Remarks.--Records good. No diversions above station. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 755: 1931-32.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.3	0.75	1.8	8.7
1.4	1.50	1.9	11.7
1.5	2.7	2.0	15.2
1.6	4.2	2.2	24
1.7	6.2	2.5	40

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.62	3.45	1.98	4.4	5.7	8.4	6.0	1.50	1.40	5.0	3.15	1.62
2	1.86	3.15	2.2	3.15	4.4	5.5	8.0	1.50	1.40	4.4	2.85	1.86
3	2.45	2.85	1.86	3.15	3.75	4.8	5.9	3.25	1.40	3.75	2.6	1.86
4	2.3	2.7	1.74	2.7	3.6	4.0	4.8	1.74	1.31	3.3	2.6	1.74
5	3.95	2.45	1.74	2.6	3.3	3.75	4.0	1.50	1.31	4.0	2.45	2.4
6	3.55	3.15	1.62	2.35	3.15	3.6	3.75	1.50	1.31	3.15	3.2	1.86
7	5.0	2.45	1.74	2.35	3.05	3.3	3.3	1.50	1.23	3.15	2.35	1.62
8	3.75	2.35	1.62	2.2	6.0	4.2	4.5	9.9	1.63	3.45	2.1	1.50
9	2.7	2.2	1.86	2.1	4.2	5.7	4.1	2.7	1.31	2.85	1.98	1.50
10	2.35	2.1	1.62	2.1	3.45	10.5	4.4	2.2	1.31	2.6	1.98	1.50
11	8.1	2.1	1.62	2.8	7.9	5.5	14.8	1.98	1.31	4.3	1.98	2.7
12	3.45	1.98	1.50	2.45	5.5	8.0	4.4	1.86	1.76	5.9	1.86	2.8
13	3.0	1.98	1.50	2.5	3.9	8.3	3.75	2.1	9.1	3.45	1.86	1.86
14	2.85	1.86	1.40	2.35	3.75	7.7	3.3	2.85	2.35	3.15	1.74	1.74
15	3.0	8.9	1.40	2.1	3.3	6.0	3.0	2.35	1.86	3.15	1.74	1.62
16	2.6	5.4	1.31	1.98	4.9	8.4	2.7	3.3	1.74	3.45	1.62	1.50
17	5.8	2.85	1.31	1.98	6.7	6.4	3.0	2.2	1.62	2.7	1.62	1.50
18	13.2	2.35	1.31	1.86	4.2	7.8	2.6	2.1	1.50	2.6	1.50	1.50
19	5.2	2.2	1.50	2.7	3.45	6.0	2.45	1.98	1.40	2.45	1.50	1.40
20	4.2	3.2	1.31	3.25	3.15	7.8	2.35	1.86	1.40	2.35	1.50	1.40
21	3.9	2.2	1.31	2.6	3.0	15.2	2.2	1.86	1.40	2.45	1.40	1.40
22	3.75	4.4	1.23	2.9	2.85	18.6	2.1	1.74	1.86	3.3	1.40	1.62
23	3.45	4.6	5.3	2.6	3.4	12.2	1.98	1.74	2.1	5.3	1.40	1.96
24	6.4	2.85	1.86	2.6	3.9	40	1.86	1.62	1.86	11.3	1.31	1.80
25	3.6	2.45	1.62	3.35	14.0	12.0	1.86	1.62	5.5	4.6	1.50	1.50
26	3.75	2.35	1.50	5.4	9.5	9.3	1.74	1.50	3.9	7.8	1.50	1.40
27	4.4	2.2	14.7	5.5	6.8	7.0	1.86	1.50	3.6	5.2	2.8	1.31
28	7.5	2.1	6.0	7.4	6.8	9.7	1.74	1.50	4.6	4.2	2.1	1.31
29	4.6	2.1	2.6	8.2	6.2	11.3	1.62	-	6.7	3.6	3.0	1.31
30	3.75	2.2	5.2	7.2	4.8	8.4	1.50	-	10.9	3.3	1.86	1.31
31	4.0	2.2	-	5.3	-	6.7	1.50	-	6.4	-	1.74	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	13.2	1.62	4.19	6.48	130	399
August	8.9	1.86	2.88	4.46	89.3	274
September	14.7	1.23	2.45	3.79	73.5	225
October	8.2	1.86	3.36	5.20	104	320
November	14.0	2.85	4.95	7.66	149	456
December	40	3.3	8.90	13.8	276	847
Calendar year 1948	87	1.23	5.27	8.15	1,930	5,920
January	14.8	1.50	3.58	5.54	111	341
February	9.9	1.50	2.25	3.48	63.0	193
March	10.9	1.23	2.79	4.32	86.5	265
April	11.3	2.35	4.01	6.20	120	369
May	3.2	1.31	2.01	3.11	62.2	191
June	2.8	1.31	1.68	2.60	50.4	155
Fiscal year 1948-49	40	1.23	3.60	5.57	1,310	4,040

Peak discharge (base, 150 m.g.d.).--Sept. 27 (10 p.m.) 288 m.g.d. (446 sec.-ft.); Dec. 24 (2 a.m.) 152 m.g.d. (235 sec.-ft.).

Hoolawanui Stream near Huelo

Location.--Concrete weir control, lat. 20°53'15", long. 156°14'55", just upstream from intake of Wailoa ditch, 2 miles west of Kailua, and 2 miles southwest of Huelo. Datum of gage is 1,219.42 feet above mean sea level (East Maui Irrigation Co. bench mark).

Records available.--December 1910 to June 1949.

Average discharge.--37 years (1911-15, 1916-49), 7.95 million gallons a day (12.3 second-feet).

Extremes.--Maximum discharge during year, 1,480 million gallons a day (2,290 second-feet) Sept. 27 (gage height, 4.46 feet), from rating curve extended above 100 million gallons a day by logarithmic plotting; minimum, 0.91 million gallons a day (1.41 second-feet) June 29.

1910-49: Maximum discharge, 2,980 million gallons a day (4,610 second-feet) Feb. 7, 1939 (gage height, 5.72 feet), from rating curve extended above 100 million gallons a day by logarithmic plotting; minimum, 0.15 million gallons a day (0.23 second-foot) Oct. 25, 1917.

Remarks.--Records good except those for periods of no gage-height record, which are fair. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.12	0.9	13.3	1.6	67
.5	2.26	1.0	18.1	1.8	95
.6	3.96	1.1	23.8	2.0	131
.7	6.26	1.2	30.4		
.8	9.3	1.4	47		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.72	5.0	2.4	10.2	10.9	22	13.3	1.8	1.29	10.7	4.6	1.39
2	1.97	4.4	3.05	4.4	7.4	8.5	18.0	1.84	1.29	8.6	4.4	1.84
3	3.35	3.95	2.25	4.2	6.3	7.5	13.7	3.45	1.29	6.3	3.95	1.72
4	3.7	3.75	2.1	3.2	5.3	6.5	9.7	1.84	1.20	5.3	3.95	1.61
5	9.8	3.4	1.97	3.2	4.8	6	8.3	1.61	1.12	6.4	3.6	2.4
6	12.5	4.2	1.84	2.55	4.4	5.5	7.1	1.61	1.12	4.8	5.0	1.50
7	11.0	3.6	1.97	2.4	3.95	5	6.3	1.50	1.12	5.0	3.2	1.39
8	6.4	3.05	1.84	2.25	13	6.5	8.1	18.9	1.52	5.5	3.05	1.29
9	3.75	2.9	2.1	2.1	6	13	7.7	3.6	1.29	4.2	2.7	1.20
10	3.4	2.55	1.72	2.1	4.5	35	7.1	2.4	1.12	3.75	2.7	1.12
11	13.6	2.55	1.84	3.55	20	11	17.6	2.1	1.39	6.9	2.55	3.0
12	4.8	2.4	1.84	2.7	9	13	6.8	1.97	2.05	13.3	2.25	3.4
13	3.95	2.4	1.61	2.9	5	15	5.8	2.25	35	5.0	2.4	1.50
14	3.75	2.1	1.39	2.4	5	14	5.3	3.75	3.3	4.4	2.1	1.29
15	3.6	22.5	1.39	1.97	4.5	11	4.8	3.0	2.25	4.7	1.97	1.29
16	3.05	9.4	1.29	1.84	8	15	4.4	5.1	1.97	5.8	1.97	1.20
17	11.0	3.75	1.29	1.84	15	12	5.8	2.55	1.72	3.95	1.84	1.12
18	21	3.6	1.20	1.72	5.8	13	4.0	2.25	1.50	3.6	1.72	1.20
19	11.3	3.05	1.61	3.0	4.8	11	3.8	1.97	1.39	3.4	1.61	1.12
20	7.7	5.0	1.20	4.9	4.5	15	3.5	1.97	1.39	3.2	1.50	1.05
21	6.3	3.2	1.12	3.9	4.0	40	3.3	1.84	1.29	3.2	1.50	1.05
22	5.8	6.1	1.12	3.75	3.8	48	3.1	1.72	2.35	4.5	1.39	1.20
23	4.8	6.7	7.4	3.75	4.5	70	2.8	1.61	3.6	7.5	1.29	1.91
24	6.8	3.95	2.0	3.2	5.5	137	2.6	1.61	3.2	21.5	1.29	1.65
25	4.6	3.4	1.39	4.1	30	35	2.6	1.50	11.0	6.7	1.50	1.05
26	4.6	3.05	1.29	8.0	15		22.5	2.4	1.50	7.1	19.5	1.39	1.05
27	7.0	2.9	51	10.4	10		17.1	2.6	1.39	4.8	9.6	3.25	.98
28	14.1	2.7	9.7	21	9.8		20.5	2.3	1.39	7.1	8.0	2.15	.98
29	6.5	2.7	2.9	21	9.0		29	2.1	-	15.7	5.8	4.6	.98
30	5.3	2.9	11.4	16	7.5		24.5	1.8	-	26	5.3	1.72	.98
31	6.3	3.2	-	10.9	-		19.2	1.8	-	12.8	-	1.39	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21	1.72	6.89	10.7	213	655
August	22.5	2.1	4.33	6.70	134	412
September	51	1.12	4.17	6.45	125	384
October	21	1.72	5.47	8.46	169	520
November	30	3.8	8.24	12.7	247	759
December	137	5	22.8	35.3	708	2,170
Calendar year 1948	439	1.12	11.7	18.1	4,290	13,160
January	18.0	1.8	6.08	9.41	188	578
February	18.9	1.39	2.79	4.32	78.0	239
March	35	1.12	5.14	7.95	159	489
April	21.5	3.2	6.88	10.6	206	633
May	5.0	1.29	2.53	3.91	78.5	241
June	3.4	.98	1.45	2.24	43.5	133
Fiscal year 1948-49	137	.98	6.44	9.96	2,350	7,210

Peak discharge (base, 300 m.g.d).--Aug. 15 (6 p.m.) 325 m.g.d. (503 sec.-ft.); Sept. 27 (10 p.m.) 1,480 m.g.d (2,290 sec.-ft.); Dec. 24 (1:30 a.m.) 615 m.g.d. (952 sec.-ft.).

Note.--No gage-height record Nov. 8-18, Nov. 20 to Dec. 23, Jan. 18-31; discharge computed on basis of records for Honopou and Hoolawaliilii Streams.

Honopou Stream near Huelo

Location.--Concrete dam and weir, lat. 20°53'20", long. 156°15'05", just upstream from Wailoa ditch intake, 2½ miles southwest of Huelo, and 2¼ miles (corrected) west of Kailua. Altitude of gage, about 1,250 feet.

Drainage area.--1.0 square mile.

Records available.--December 1910 to June 1949.

Average discharge.--36 years (1911-14, 1916-49), 3.12 million gallons a day (4.83 second-feet).

Extremes.--Maximum discharge during year, 210 million gallons a day (325 second-feet) Sept. 27 (gage height, 3.60 feet), from rating curve extended above 70 million gallons a day by logarithmic plotting; minimum, 0.35 million gallons a day (0.54 second-foot) June 29.

1910-49: Maximum discharge, 1,220 million gallons a day (1,890 second-feet) Nov. 18, 1930 (gage height, 7.28 feet), from rating curve extended above 70 million gallons a day by logarithmic plotting; minimum, 0.01 million gallons a day (0.02 second-foot) on several days in 1933, 1934.

Remarks.--Records good except those for periods of no gage-height record, which are fair. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.60	0.9	5.3	1.6	22
.6	1.37	1.0	7.15	1.8	28.5
.7	2.41	1.2	11.5	2.0	37
.8	3.72	1.4	16.5		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.83	1.79	0.98	2.6	4.5	7.1	6.4	0.98	0.60	3.6	1.99	0.7
2	1.00	1.58	1.14	1.58	3.05	4.3	8.2	.98	.60	3.2	1.89	1.0
3	1.42	1.47	.91	1.68	2.8	3.6	5.5	2.7	.60	2.55	1.79	.9
4	1.20	1.37	.83	1.37	2.4	3.35	4.5	1.14	.60	2.2	1.68	.85
5	2.6	1.29	.83	1.37	2.2	2.95	4.0	.98	.60	2.9	1.58	1.5
6	1.95	1.58	.75	1.22	1.99	2.8	3.6	.91	.55	1.99	2.4	.8
7	2.9	1.22	.75	1.22	1.89	2.4	3.2	.91	.55	2.05	1.37	.65
8	1.68	1.14	.68	1.14	6.2	3.8	4.9	10.7	.75	2.20	1.29	.62
9	1.06	1.1	.83	1.06	3.05	3.85	3.65	1.68	.60	1.68	1.22	.58
10	.98	1.0	.75	1.06	2.2	9.6	5.9	1.14	.60	1.58	1.14	.55
11	6.1	1.0	.75	1.67	5.5	4.2	13.5	.98	.68	3.05	1.14	1.92
12	1.58	.95	.75	1.22	3.2	6.4	3.35	.98	1.22	4.1	1.06	1.52
13	1.37	.95	.68	1.32	2.2	7.9	2.95	1.06	7.7	1.99	1.06	.68
14	1.22	.91	.60	1.14	2.2	6.9	2.65	2.05	1.22	1.79	.98	.60
15	1.29	7	.60	.98	1.99	5.1	2.4	1.29	.91	1.89	.98	.55
16	1.14	4	.55	.91	4.0	7.7	2.3	2.15	.83	2.1	.91	.55
17	3.7	1.6	.55	.91	5.4	6.0	2.95	1.06	.75	1.58	.91	.50
18	10.7	1.2	.55	.83	2.4	7.1	2.2	.98	.68	1.47	.83	.55
19	2.95	1.1	.75	1.54	2.1	5.2	1.99	.91	.68	1.37	.83	.50
20	2.30	1.83	.55	2.05	1.99	7.5	1.79	.91	.60	1.29	.75	.50
21	2.30	1.14	.50	1.22	1.89	13.3	1.68	.83	.60	1.37	.75	.45
22	2.20	2.25	.50	1.73	1.99	18.6	1.58	.83	.98	2.2	.68	.55
23	1.94	2.05	4.1	1.22	2.55	13.7	1.47	.83	1.22	3.65	.60	.83
24	3.95	1.22	.91	1.29	2.85	43	1.37	.75	.98	8.7	.60	.83
25	1.79	1.14	.60	2.1	12.9	14.6	1.37	.75	4.5	2.4	.75	.50
26	1.79	1.06	.55	3.75	5.8	11.7	1.29	.75	2.55	5.6	.70	.45
27	2.45	.98	13.4	3.45	5.2	8.4	1.29	.68	2.15	3.45	1.9	.45
28	4.8	.98	5.0	5.2	5.3	10.4	1.22	.68	2.7	2.95	1.3	.40
29	2.65	1.06	1.29	5.5	4.4	12.1	1.22	-	3.75	2.4	2.0	.40
30	1.89	1.14	3.25	5.3	3.35	9.0	1.14	-	7.9	2.2	.9	.40
31	2.35	1.14	-	3.9	-	7.4	1.06	-	4.4	-	.7	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	10.7	0.83	2.45	3.79	76.1	233
August	7	.91	1.56	2.41	48.2	148
September	13.4	.50	1.50	2.32	44.9	138
October	5.5	.83	1.98	3.06	61.5	189
November	12.9	1.89	3.58	5.54	107	330
December	43	2.4	8.71	13.5	270	828
Calendar year 1948	91	.50	4.32	6.68	1,580	4,850
January	13.5	1.06	3.25	5.03	101	309
February	10.7	.68	1.45	2.24	40.6	125
March	7.9	.55	1.71	2.65	53.0	163
April	8.7	1.29	2.65	4.10	79.5	244
May	2.4	.60	1.18	1.83	36.7	113
June	1.92	.40	.709	1.10	21.3	65
Fiscal year 1948-49	43	.40	2.58	3.99	940	2,880

Peak discharge (base, 100 m.g.d.).--July 18 (5 a.m.) 105 m.g.d. (162 sec.-ft.); Sept. 27 (10:30 p.m.) 210 m.g.d. (325 sec.-ft.); Dec. 24 (2 a.m.) 148 m.g.d (229 sec.-ft.).

Note.--No gage-height record Aug. 9-19, May 26 to June 9; discharge computed on basis of records for Hoolawanui and Hoolawaliiiii Streams.

Wailoa ditch at Honopou, near Huelo

Location.--Lat. 20°53'20", long. 156°15'05", 100 feet downstream from intake at Honopou Stream, half a mile west of Lupi, 2.2 miles southwest of Huelo, and 2.2 miles west of Kailua.

Records available.--November 1922 to June 1949.

Average discharge.--26 years (1923-49), 114 million gallons a day (176 second-feet).

Extremes.--Maximum discharge during year, 185 million gallons a day (286 second-feet) Sept. 27, Mar. 13 (gage height, 6.07 feet); minimum discharge, 35 million gallons a day (54 second-feet) Mar. 8.
1922-49: Maximum discharge, 189 million gallons a day (292 second-feet) Mar. 28, 1947 (gage height, 6.18 feet); minimum, 4.8 million gallons a day (7.4 second-feet) Feb. 6, 1948.

Remarks.--Records excellent below 150 million gallons a day, good above. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from the Alo west to the Halehaku at altitude of about 1,200 feet. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	114	164	97	176	176	157	90	56	44	176	112	63
2	132	151	138	172	172	148	90	56	41	176	104	88
3	144	142	93	166	156	144	110	73	41	164	93	113
4	138	129	79	124	136	144	116	59	41	136	109	98
5	176	104	72	119	124	136	120	53	38	169	112	124
6	176	145	66	93	104	144	124	50	38	142	126	84
7	176	132	76	86	97	132	124	47	36.5	145	90	66
8	172	97	63	76	174	144	114	112	52	162	76	59
9	158	93	85	69	167	148	104	108	69	112	72	53
10	136	82	76	69	164	144	120	85	50	93	69	50
11	162	97	90	135	167	143	108	69	73	132	69	87
12	162	97	98	120	172	144	112	63	65	176	63	138
13	150	97	69	117	160	140	115	82	180	136	66	76
14	132	76	59	90	152	136	108	87	164	108	63	63
15	126	113	56	72	128	128	101	93	142	111	66	56
16	110	176	53	66	176	120	97	82	93	166	72	53
17	138	164	50	69	168	124	97	94	72	116	54	50
18	176	124	50	59	162	111	97	79	59	93	53	50
19	176	111	73	117	128	97	97	69	53	88	50	47
20	172	159	50	112	112	124	97	63	50	82	47	47
21	168	120	62	168	101	117	97	59	47	85	47	44
22	158	157	47	172	101	101	90	56	121	144	44	57
23	132	176	154	172	140	93	82	53	172	171	41	142
24	169	156	122	160	146	79	79	53	164	176	41	116
25	156	124	72	160	135	76	76	50	150	172	65	80
26	168	104	63	176	176	86	66	47	170	176	72	65
27	172	97	134	176	172	108	63	47	166	172	162	47
28	176	93	172	176	176	112	66	47	170	168	135	47
29	172	92	130	176	176	108	63	-	176	148	162	44
30	168	126	134	176	176	93	63	-	180	132	93	44
31	172	159	-	176	-	86	59	-	176	-	72	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	176	110	156	241	4,840	14,840
August	176	76	124	192	3,860	11,840
September	172	47	86.1	133	2,580	7,930
October	176	59	129	200	4,000	12,260
November	176	97	150	232	4,490	13,790
December	157	76	122	189	3,770	11,560
Calendar year 1948	180	36.5	123	190	45,090	138,300
January	124	59	95.0	147	2,940	9,040
February	112	47	67.6	105	1,890	5,810
March	180	36.5	99.8	154	3,090	9,490
April	176	82	141	218	4,230	12,970
May	162	41	80.6	125	2,500	7,670
June	142	44	71.7	111	2,150	6,600
Fiscal year 1948-49	180	36.5	111	172	40,340	123,800

New Hamakua ditch at Honopou, near Huelo

Location.--Concrete control, lat. 20°53'30", long. 156°15'10", 15 feet upstream from tunnel portal, 600 feet downstream from Honopou Stream crossing, 2.1 miles southwest of Huelo, and 2.3 miles west of Kailua.

Records available.--January 1918 to June 1949.

Average discharge.--31 years, 27.8 million gallons a day (43.0 second-feet).

Extremes.--Maximum discharge during year, 108 million gallons a day (167 second-feet) Sept. 27 (gage height, 5.45 feet); minimum, 0.05 million gallons a day (0.08 second-foot) Feb. 10.
1918-49: Maximum discharge, 143 million gallons a day (221 second-feet) Feb. 27, 1932 (gage height, 5.90 feet); no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Ditch diverts water from streams between the Waiakamoi and the Halehaku above Center and Lowrie ditches. Flow regulated by gates and spillways. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.3	37.5	1.65	92	92	72	0.21	0.97	0.92	86	2.15	0.82
2	7.6	8.6	9.2	66	57	74	.24	1.31	.82	84	2.0	1.13
3	32.5	5.8	1.65	29.5	10.9	72	.21	11.3	.82	46	1.85	3.55
4	26.5	5.5	1.25	1.65	2.5	50	.24	1.66	.76	6.6	8.0	2.5
5	90	2.1	1.13	1.58	2.1	11.6	.24	1.08	.71	47	10.0	19.4
6	90	33	1.08	1.31	1.93	43	.24	.92	.66	4.2	21	2.75
7	92	18.7	1.18	1.25	1.85	7.7	.24	.82	.66	5.4	1.85	.97
8	a70	1.78	1.08	1.13	79	53	.26	12.1	.86	21	1.52	.82
9	a3.6	1.72	1.18	.92	48	76	.24	.06	1.02	7.8	1.38	.71
10	a2.6	1.45	1.18	.87	34	72	.25	.05	.76	5.7	1.25	.66
11	a70	1.65	1.13	17.1	59	54	.21	.06	1.08	35.5	1.25	16.0
12	a8.5	1.38	1.25	2.1	84	28	.15	.08	1.07	90	1.18	49
13	a1.90	1.38	.97	1.38	22.5	16.8	.17	.10	87	32	1.13	2.0
14	a1.80	1.25	.82	1.38	13.4	4.8	.17	.10	49	13.6	1.08	1.02
15	2.35	25.5	.76	.92	4.0	3.65	.19	.06	5.7	13.7	.92	.87
16	1.72	90	.96	.82	81	3.65	.21	.06	.92	63	.97	.82
17	a80	39.5	.66	.87	60	3.65	.24	.06	.71	16.2	.76	.71
18	a94	5.6	.66	.82	35	3.65	.21	.89	.66	8.9	.66	.62
19	a70	1.78	1.04	21.5	10.5	3.65	.24	1.25	.66	7.0	.66	.66
20	a12.0	52	.82	23	5.7	3.65	.24	1.18	.62	4.2	.62	.66
21	a2.5	4.8	.66	59	3.55	3.55	.24	1.56	.58	1.65	.58	.62
22	a2.2	51	.62	56	3.35	3.45	.24	1.18	14.0	21	.55	.55
23	2.0	90	69	80	20.5	3.35	.24	1.18	61	75	.51	46
24	55	23.5	20.5	29.5	33.5	3.1	.26	1.13	47	96	.47	14.7
25	11.6	2.0	.92	34	21.5	2.85	.26	1.08	33	74	1.35	.82
26	32.5	1.78	.71	90	88	2.85	.26	1.08	68	94	1.41	.66
27	77	1.65	46	92	56	2.85	.28	1.02	47	84	63	.58
28	86	1.52	80	94	94	1.30	.39	1.02	65	60	22	.55
29	72	1.31	4.8	95	94	.55	.39	-	88	5.1	67	.78
30	28	1.72	29.5	94	82	.31	.39	-	94	2.55	3.35	.62
31	57	29	-	92	-	.19	1.21	-	90	-	1.08	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	94	1.72	38.3	59.3	1,190	3,640
August	90	1.25	17.6	27.2.	544	1,670
September	80	.62	9.41	14.6	282	867
October	95	.82	34.9	54.0	1,080	3,320
November	94	1.85	40.0	61.9	1,200	3,690
December	76	.19	22.0	34.0	681	2,090
Calendar year 1948	98	.19	30.7	47.5	11,250	34,510
January	1.21	.15	.276	.427	8.56	26
February	12.1	.05	1.55	2.40	43.4	133
March	94	.58	24.6	38.1	763	2,340
April	96	1.65	37.0	57.2	1,110	3,410
May	67	.47	7.15	11.1	222	680
June	49	.55	5.72	8.85	172	526
Fiscal year 1948-49	96	.05	20.0	30.9	7,300	22,380

a No gage-height record; discharge computed on basis of records for stations on nearby ditches.

Old Hamakua ditch at Honopou, near Huelo

Location.--Modified Parshall flume, lat. 20°53'30", long. 156°15'05", in Honopou Gulch, 400 feet downstream from Honopou Stream and Wailoa ditch trail crossing, 2.0 miles southwest of Huelo, 2.3 miles west of Kailua, and 5.0 miles east of Haiku.

Records available.--January 1918 to June 1922, November 1936 to June 1949.

Average discharge.--16 years (1918-22, 1937-49), 2.68 million gallons a day (4.15 second-feet).

Extremes.--Maximum discharge during year, 30.5 million gallons a day (47.2 second-feet) Sept. 27 (gage height, 2.37 feet); minimum, 0.01 million gallons a day (0.02 second-foot) Aug. 28, Oct. 3, 4.

1918-22, 1936-49: Maximum discharge, 58 million gallons a day (90 second-feet) Jan. 16, 1921, Feb. 7, 1939 (gage heights, 3.25 and 3.55 feet, respectively, different sites); no flow for short periods.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Wailoa and New Hamakua ditches divert most of flow above this station. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.03	0.37	0.04	8.5	8.2	0.68	0.28	0.13	0.02	6.2	0.03	0.02
2	.03	.05	.05	1.44	1.67	.55	.33	.10	.02	4.5	.03	.02
3	.14	.04	.04	.02	.06	.39	.30	.34	.02	.10	.03	.03
4	.29	.03	.03	.01	.04	.16	.28	.06	.02	.05	.03	.02
5	6.8	.03	.03	.03	.04	.06	.28	.04	.02	.16	.03	.05
6	7.4	.08	.02	.02	.03	.07	.28	.03	.02	.05	.31	.04
7	9.0	.09	.03	.03	.04	.06	.28	.04	.02	.04	.04	.02
8	3.75	.04	.03	.03	6.9	5.6	.30	3.85	.03	.05	.03	.02
9	.08	.03	.04	.02	.26	10.4	.30	3.15	.02	.04	.02	.02
10	.04	.02	.03	.02	.12	4.6	.35	1.14	.02	.03	.02	.02
11	8.0	.02	.03	.02	5.6	.43	.34	1.04	.02	2.5	.02	1.14
12	1.06	.02	.03	.04	4.3	.86	.25	1.04	.03	7.4	.02	2.35
13	.05	.02	.03	.04	1.56	.86	.23	1.04	all	.09	.02	.04
14	.03	.02	.03	.03	.05	.86	.23	.72	a5.0	.04	.02	.03
15	.03	5.0	.03	.02	.05	.86	.20	.38	a.03	.04	.02	.02
16	.03	10.8	.04	.02	5.3	.90	.23	.38	a.02	2.2	.02	.02
17	12.2	.27	.03	.02	4.5	.81	.23	.33	a.02	.05	.02	.02
18	14.3	.05	.03	.02	1.27	.86	.25	.20	a.02	.03	.02	.02
19	8.9	.04	.04	.04	.06	.81	.25	.13	a.02	.03	.02	.02
20	.79	1.96	.03	1.70	.05	.86	.23	.12	a.02	.03	.02	.02
21	.05	.06	.03	.71	.04	.86	.17	.09	a.02	.03	.02	.02
22	.04	4.2	.03	.27	.04	.90	.14	.04	a.02	.04	.02	.02
23	.04	6.8	7.2	1.40	.06	.86	.14	.03	a.06	3.95	.02	.07
24	3.9	.12	.32	.10	.51	a.78	.14	.02	a.04	13.7	.02	.04
25	.06	.04	.05	.63	3.4	a.65	.14	.02	a.10	2.5	.02	.03
26	.05	.02	.04	6.2	7.7	a.41	.14	.02	3.9	12.2	.02	.02
27	2.85	.02	5.0	8.0	2.5	a.28	.16	.02	.29	5.5	1.52	.02
28	10.8	.01	5.8	10.1	10.0	.28	.16	.02	3.3	1.29	.07	.02
29	.36	.02	.04	10.3	9.4	.30	.16	-	6.8	.05	1.51	.02
30	.09	.03	3.2	9.8	1.81	.28	.16	-	12.6	.04	.05	.02
31	1.63	.04	-	8.2	-	.28	.13	-	8.9	-	.03	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14.3	0.03	2.99	4.63	92.8	285
August	10.8	.01	.979	1.51	30.3	93
September	7.2	.02	.746	1.15	22.4	69
October	10.3	.01	2.19	3.39	67.8	208
November	10.0	.03	2.52	3.90	75.6	232
December	10.4	.06	1.18	1.83	36.6	112
Calendar year 1948	22	.01	3.39	5.25	1,240	3,810
January	.35	.13	.228	.353	7.06	22
February	3.85	.02	.519	.803	14.5	45
March	12.6	.02	1.69	2.61	52.4	161
April	13.7	.03	2.10	3.25	62.9	193
May	1.52	.02	.131	.203	4.07	12
June	2.35	.02	.141	.218	4.22	13
Fiscal year 1948-49	14.3	.01	1.29	2.00	471	1,440

a No gage-height record; discharge computed on basis of records for nearby ditches.

Lowrie ditch at Honopou Gulch, near Huelo

Location.--Concrete control, lat. 20°54'55", long. 156°15'05", a quarter of a mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.5 miles northwest of Kailua. Datum of gage is 598.0 feet above mean sea level.

Records available.--February 1930 to June 1949. January 1910 to March 1927 at site 1½ miles downstream.

Average discharge.--35 years (1910-26, 1930-49), 30.1 million gallons a day (46.6 second-feet).

Extremes.--Maximum discharge during year, 56 million gallons a day (87 second-feet) Sept. 27 (gage height, 4.87 feet); minimum, 0.44 million gallons a day (0.68 second-foot) Feb. 24-27.
1930-49: Maximum discharge, 88 million gallons a day (136 second-feet) Mar. 21, 1937 (gage height, 5.44 feet); no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Lowrie ditch diverts water from all streams between Kailua and Halehaku. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.8	27.5	11.6	49	45	47	1.60	0.62	17.6	43	13.3	10.6
2	12.8	14.9	14.2	33.5	33	45	1.81	.62	10.1	34.5	12.2	8.6
3	20	16.3	10.0	16.5	16.5	38.5	1.70	.62	5.8	23.5	22	8.8
4	14.7	17.6	8.6	33.5	19.9	32.5	1.50	.62	5.3	15.8	23.5	8.0
5	a40	11.3	7.8	13.8	31	28	1.41	.67	5.0	30	12.4	11.1
6	a43	21.5	7.6	13.8	18.8	28	1.41	.90	4.6	17.0	17.2	8.0
7	a48	15.9	8.4	11.8	13.3	18.8	1.32	.98	4.5	13.5	10.0	6.4
8	a38	10.2	7.3	8.8	41	25.5	1.62	2.2	5.7	16.3	8.6	5.8
9	17.3	10.0	8.0	8.2	24.5	49	1.60	.72	6.2	12.9	8.0	5.7
10	17.6	8.8	7.8	8.2	33	43	3.1	.62	5.0	11.1	12.5	5.3
11	f40	9.4	7.8	14.4	47	4.8	3.4	.57	5.8	19.2	9.3	10.0
12	27.5	9.0	7.4	10.0	49	4.2	1.41	.57	5.5	43	7.1	31
13	14.2	8.0	6.9	8.8	36.5	3.35	1.23	.62	31	19.5	7.3	25.5
14	18.8	7.6	5.8	8.8	34.5	2.9	1.06	.62	24	13.5	7.1	10.7
15	18.8	15.5	5.5	7.6	17.6	2.6	.98	.57	9.6	12.2	6.9	6.5
16	19.9	49	5.3	6.9	43	2.75	.98	.62	7.4	30	6.4	6.2
17	f45	36.5	5.2	7.1	47	2.5	1.14	.57	12.0	11.4	6.0	5.8
18	a49	29.5	5.5	6.5	45	2.4	.90	.52	15.1	9.4	5.7	5.8
19	a43	12.0	6.0	15.1	34.5	2.25	.90	.52	11.2	12.4	5.3	5.7
20	f27	30.5	5.3	17.0	17.6	2.4	.84	.48	5.2	22	5.0	5.5
21	16.0	18.5	4.8	39.5	15.8	2.9	.84	.48	4.6	19.9	4.6	5.0
22	21	28.5	4.5	36	15.1	3.05	.78	.48	9.5	15.1	4.5	5.2
23	22	47	36.5	47	19.9	2.5	.84	.48	32.5	32	4.3	22
24	43	24.5	35.5	20.5	29	4.3	.78	.44	25.5	45	4.2	11.5
25	19.9	31.5	17.6	21.5	22.5	2.4	.72	.44	14.9	34.5	7.8	6.9
26	27	18.8	6.5	47	49	2.5	.72	.44	37.5	43	8.0	6.7
27	41	12.4	24	49	34.5	2.05	.72	.44	25.5	41	35	5.0
28	49	12.0	49	49	51	2.15	.72	10.4	31	36.5	32.5	4.6
29	43	11.1	28	49	51	1.92	.67	-	45	16.5	31	4.3
30	32.5	9.4	31.5	49	41	1.70	.62	-	47	14.7	12.4	4.3
31	31	10.8	-	47	-	1.70	.62	-	45	-	27	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	49	12.8	29.5	45.6	914	2,800
August	49	7.6	18.9	29.2	586	1,800
September	49	4.5	13.0	20.1	391	1,200
October	49	6.5	24.3	37.6	754	2,310
November	51	15.1	32.6	50.4	976	3,000
December	49	1.70	13.3	20.6	413	1,270
Calendar year 1948	55	1.60	22.9	35.4	8,370	25,700
January	3.4	.62	1.22	1.89	37.9	116
February	10.4	.44	.994	1.54	27.8	85
March	47	4.5	16.6	25.7	515	1,580
April	45	9.4	23.6	36.5	708	2,170
May	35	4.2	12.2	18.9	377	1,160
June	31	4.3	8.88	13.7	266	818
Fiscal year 1948-49	51	.44	16.3	25.2	5,970	18,310

a No gage-height record; discharge computed on basis of records for stations on nearby ditches.
f Computed on basis of partly estimated gage-height record.

Haiku ditch at Honopou Gulch, near Kailua

Location.--Concrete control, lat. 20°55'05", long. 156°14'55", on right side of Haiku ditch and west side of Honopou Gulch, 160 feet below new Government Road, 2.5 miles northwest of Kailua, and 5 miles east of Haiku. Datum of gage is 421.54 feet above mean sea level.

Records available.--February 1940 to June 1949. January 1910 to October 1914 at site at Peahi weir on old Haiku ditch. October 1914 to December 1928 at site in Manawai Gulch, 2.9 miles downstream. February 1930 to February 1940 at site in Kapalalaea Gulch, 0.9 mile downstream.

Average discharge.--37 years (1910-28, 1930-49), 22.8 million gallons a day (35.3 second-feet).

Extremes.--Maximum discharge during year, 82 million gallons a day (127 second-feet) Sept. 27 (gage height, 3.36 feet); minimum, 0.18 million gallons a day (0.28 second-foot) Feb. 1, June 29.
1910-28, 1930-49: Maximum discharge, 195 million gallons a day (302 second-feet) Mar. 23, 1937 (gage height, 5.80 feet, site and datum then in use); no flow at times.

Remarks.--Records good. Haiku ditch diverts water from all streams between the Kailua Stream and the Maliko Gulch. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.77	5.3	1.60	62	40	23.5	0.83	0.24	1.86	34.5	2.35	0.65
2	.83	1.46	1.88	7.4	9.1	14.1	.83	.26	.83	8.5	2.25	.51
3	1.08	1.32	1.53	2.15	2.75	18.8	.77	.26	.77	2.3	2.5	.58
4	.71	1.25	1.39	4.5	2.45	5.2	.77	5.4	.62	1.60	2.6	.48
5	54	1.13	1.25	1.25	2.5	4.1	.77	3.3	.54	4.9	2.05	.51
6	59	1.91	1.25	.95	2.05	3.95	.77	1.32	.51	1.80	2.45	.48
7	60	1.39	1.46	.89	1.81	3.4	.65	8.7	.51	1.39	1.88	.34
8	25.5	1.07	1.19	.65	40	10.6	.78	4.5	.82	1.67	1.67	.30
9	2.1	1.07	1.32	.62	3.65	54	.77	1.19	.62	1.19	1.25	.28
10	1.13	.89	1.25	.65	3.8	38	.74	1.13	.51	1.07	1.07	.26
11	32	.95	1.19	1.40	33.5	19.6	.62	1.13	.62	15.0	1.07	1.96
12	14.6	.89	1.13	1.01	32.5	10.4	.34	1.07	.54	54	.89	14.0
13	1.53	.77	.81	.71	4.7	14.1	.30	1.07	57	4.6	.95	1.19
14	1.19	.65	.51	.60	3.2	10.0	.26	1.07	13.2	3.7	.77	.62
15	1.25	15.9	.48	.58	2.65	1.60	.24	1.07	.83	3.65	.65	.37
16	1.07	57	.44	.51	26.5	1.60	.22	1.01	.71	15.3	.71	.30
17	42	3.25	.40	.54	25.5	1.53	.26	1.01	.71	3.3	.62	.28
18	69	1.88	.48	.48	19.7	1.46	.30	.95	.58	2.95	.58	.28
19	35.5	2.35	.62	.94	3.6	1.39	.28	.89	.54	3.05	.54	.30
20	5.1	4.3	.40	14.5	2.85	1.39	.26	.95	.40	3.5	.51	.26
21	1.60	1.70	.37	27.5	2.6	1.39	.24	.95	.37	2.55	.48	.26
22	1.39	16.6	.34	3.5	2.45	1.39	.26	.95	.67	1.88	.48	.28
23	1.25	35	43	12.0	3.0	1.25	.28	.95	1.65	14.6	.44	2.25
24	23	3.4	4.5	1.60	5.1	1.36	.28	.95	1.24	71	.40	.58
25	1.98	2.75	.83	1.48	12.2	1.07	.28	.95	12.9	19.5	.54	.30
26	1.84	2.35	.51	30	44	1.01	.28	.95	38	65	.58	.26
27	11.2	1.95	16.2	53	11.6	.95	.26	.95	3.05	29.5	27.5	.24
28	46	1.95	42	68	68	.95	.28	3.5	29	3.6	2.35	.22
29	9.0	1.88	2.3	68	63	.95	.28	-	52	2.85	2.35	.22
30	3.3	1.81	16.1	58	9.4	.89	.26	-	69	2.6	.89	.22
31	7.6	1.81	-	32	-	.89	.24	-	51	-	.95	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	69	0.71	16.7	25.8	517	1,590
August	57	.65	5.68	8.79	176	540
September	43	.34	4.89	7.57	147	450
October	68	.48	14.8	22.9	457	1,400
November	68	1.81	16.1	24.9	484	1,490
December	54	.89	8.09	12.5	251	770
Calendar year 1948	74	.07	14.2	22	5,200	15,940
January	.83	.22	.442	.684	13.7	42
February	8.7	.24	1.67	2.58	46.7	143
March	69	.37	11.0	17.0	342	1,050
April	71	1.07	12.7	19.6	381	1,170
May	27.5	.40	2.07	3.20	64.3	197
June	14.0	.22	.959	1.48	28.8	88
Fiscal year 1948-49	71	.22	7.97	12.3	2,910	8,930

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements on the island of Maui at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on Maui during fiscal year July 1948 to June 1949

Date	Stream	Tributary to--	Locality	Discharge	
				Second-feet	Million gallons a day
Aug. 13	Haipuaena flume.	Waiakamoi Reservoir.	75 feet east of Waiakamoi Reservoir, near Olinda.	0.477	0.308
Sept.30	....do.....	....do.....	250 feet east of Waiakamoi Reservoir, near Olinda.	2.36	1.53
Feb. 3	....do.....	....do.....	100 feet east of Waiakamoi Reservoir, near Olinda.	.272	.176

Waiakea Stream at middle flume house, near Mountain View

Location.--Parshall flume and concrete dam control, lat. 19°38'25", long. 155°10'35", at middle flume house, 800 feet upstream from Olaa Sugar Co.'s main flume and 7½ miles northwest of Mountain View.

Records available.--September 1930 to June 1949.

Average discharge.--18 years (1931-49), 7.13 million gallons a day (11.0 second-feet).

Extremes.--Maximum discharge during year, 130 million gallons a day (201 second-feet) Jan. 1 (gage height, 4.16 feet), from rating curve extended above 40 million gallons a day by weir formulae; minimum, 0.18 million gallons a day (0.28 second-foot) June 20.
1930-49: Maximum discharge, 166 million gallons a day (257 second-feet) Mar. 14, 1942 (gage height, 4.43 feet), from rating curve extended above 40 million gallons a day by weir formulae; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversions above station. Large part of flow comes from three tunnels. Water is used for fluming sugarcane.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.11	0.5	1.53	2.0	15.3
.2	.34	1.0	4.8	2.5	25
.3	.66	1.5	9.2	3.0	39.5

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.6	4.1	6.0				34	6.5	6.5	21.5	3.7	0.90
2	3.3	3.9	5.5				44	6.0	6.0	21.5	3.6	.82
3	3.4	7.5	5.6	7	17		42	10.5	5.4	20.5	3.4	.86
4	3.6	4.5	5.1			22	39.5	8.3	5.0	19.6	3.8	.74
5	5.8	4.0	4.8				37.5	7.4	4.6	17.8	3.9	.66
6	9.7	4.4	4.6				31	6.9	4.2	16.1	4.2	.63
7	11.3	3.9	4.3				28.5	6.5	3.8	14.6	3.9	.53
8	10.8	3.6	4.1	4.5	12	14.6	31	7.7	4.0	12.5	3.7	.50
9	10.8	3.4	4.4			18.4	28.5	6.5	4.1	11.3	3.45	.44
10	10.8	3.25	4.1			19.6	24	6.5	3.6	10.2	3.2	.37
11	11.3	3.4	4.0			19.6	20.5	5.6	4.0	9.7	3.0	.34
12	10.8	3.45	5.8			21.5	19.6	5.3	4.4	9.7	2.8	.32
13	10.2	4.2	5.0		35	26	16.9	5.0	4.6	8.7	2.65	.29
14	9.7	3.55	4.5			26	17.6	10.6	4.6	7.8	2.6	.27
15	9.7	5.0	4.1			25	23.5	17.1	4.3	7.4	2.45	.25
				3.4								
16	9.2	5.5	3.9			24	20.5	17.8	4.0	7.4	2.3	.22
17	8.7	5.1	3.7			20.5	18.7	17.8	3.7	6.5	2.15	.22
18	8.3	4.7	3.6		23	18.7	19.6	17.8	3.45	6.0	2.0	.20
19	7.4	4.3	4.1			16.9	18.7	16.9	3.25	5.6	1.91	.20
20	6.9	4.2	3.95			15.3	16.9	15.3	3.0	5.3	1.80	.20
21	6.5	3.9				13.8	16.1	13.8	2.8	4.9	1.64	.22
22	6.0	4.7				15.0	13.8	12.5	2.65	4.8	1.53	.59
23	6.0	11.3	5.6	3.8	14	16.4	12.5	11.3	2.8	4.4	1.44	1.06
24	5.6	8.3				24.5	12.5	10.2	3.8	7.8	1.34	.37
25	5.4	7.8				27	10.8	9.2	4.3	6.0	1.25	.29
26	5.5	7.6				29.5	10.2	8.3	14.4	5.4	1.15	.29
27	5.3	7.4				28.5	9.2	7.8	20	5.0	1.06	.25
28	5.3	6.9	4.6	21	16	27	8.7	6.9	16.9	4.6	1.02	.22
29	4.9	6.5				26	7.8	-	20	4.1	1.44	.22
30	4.6	6.0				22.5	7.4	-	20.5	3.9	1.06	.22
31	4.4	6.0	-		-	21.5	6.9	-	21.5	-	1.02	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	11.3	3.3	7.25	11.2	225	690
August	11.3	3.25	5.24	8.11	162	498
September	-	-	4.74	7.33	142	436
October	-	-	7.63	11.8	236	726
November	-	-	19.5	30.2	585	1,800
December	29.5	13.8	21.7	33.6	672	2,060
Calendar year 1948	-	.25	9.59	14.8	3,510	10,780
January	44	6.9	20.9	32.3	648	1,990
February	17.8	5.0	10.1	15.6	282	865
March	21.5	2.65	6.97	10.8	216	663
April	21.5	3.9	9.69	15.0	291	892
May	4.2	1.02	2.40	3.71	74.5	229
June	1.06	.20	.423	.654	12.7	39
Fiscal year 1948-49	44	.20	9.72	15.0	3,550	10,890

Peak discharge (base, 50 m.g.d.).--Nov. 11 (time unknown) 78 m.g.d. (121 sec.-ft.); Jan. 1 (9:30 p.m.) 130 m.g.d. (201 sec.-ft.); Jan. 8 (5:30 a.m.) 53 m.g.d. (82 sec.-ft.); Feb. 3 (4:30 p.m.) 56 m.g.d. (87 sec.-ft.).
Note.--Faulty or no gage-height record Aug. 24-27, Sept. 21 to Dec. 7; discharge computed from intermittent record, recorded range in stage, and records for Wailuku River near Hilo.

Wailuku River above Hilo Boarding School ditch intake, near Hilo

Location.--Lat. 19°42'55", long. 155°09'10", 1,000 feet upstream from intake of Hilo Boarding School ditch, three-quarters of a mile west of reservoir 1, and 4 miles west of Hilo. Altitude of gage, 1,060 feet (by barometer).
Drainage area.--125 square miles (corrected).
Records available.--July 1928 to June 1949.
Average discharge.--18 years (1929-40, 1941-47, 1948-49), 175 million gallons a day (271 second-feet).
Extremes.--Maximum discharge during year, 10,700 million gallons a day (16,600 second-feet) Nov. 11 (gage height, 18.35 feet), from rating curve extended above 3,400 million gallons a day by logarithmic plotting; minimum, 1.66 million gallons a day (2.57 second-feet) June 20.
1928-49: Maximum discharge, 41,000 million gallons a day (63,400 second-feet) Aug. 11, 1940 (gage height, 28.6 feet, from floodmarks), from rating curve extended above 3,400 million gallons a day by logarithmic plotting; minimum, 0.16 million gallons a day (0.25 second-foot) Mar. 9, 1941.
Remarks.--Records good. Hilo Water Works diverts about 1 million gallons a day above station for domestic supply, and water passing station is used for power by Hilo Electric Light Co.
Revisions (fiscal years).--W 865: 1929-36(M). W 965: 1941.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.4	2.4	2.1	17.5	4.0	130	10.0	1,520
1.5	3.1	2.3	25.5	5.0	245	11.0	2,020
1.6	4.5	2.5	33.5	6.0	400	12.0	2,690
1.7	6.3	2.7	43	7.0	610	13.0	3,510
1.8	8.5	3.0	59	8.0	870	14.0	4,460
1.9	11.0	3.5	92	9.0	1,170		

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	56	31.5	78	82	290	2,740	2,010	38	29.5	610	24.5	13.4
2	36	29.5	48	68	218	783	2,840	33.5	27.5	485	25.5	13.1
3	50	145	43	59	147	417	1,730	152	25.5	254	24.5	13.4
4	38	65	33.5	50	147	275	685	138	25.5	158	47	13.4
5	246	41	29.5	59	147	192	420	271	24	114	59	10.5
6	651	77	25.5	46	106	180	305	158	24	92	59	10.2
7	746	53	27.5	36	107	130	292	74	21	85	48	10.0
8	320	36	24.5	29.5	147	122	1,100	233	19.1	65	33.5	9.0
9	209	31.5	47	29.5	138	774	859	114	43	50	29.5	7.8
10	130	33.5	53	27.5	114	955	350	65	25	43	25.5	6.1
11	159	41	36	24.5	4,200	718	245	82	32	38	23	5.4
12	149	33.5	70	22.5	2,700	365	310	59	60	71	21.5	4.2
13	92	112	59	20.5	733	886	218	59	33.5	59	22.5	3.0
14	71	43	36	17.9	420	608	195	693	29.5	46	29.5	3.7
15	85	244	29.5	32	275	457	517	1,680	27.5	43	27.5	10.8
16	82	550	25.5	55	619	335	290	760	23.5	43	22.5	6.5
17	65	172	27.5	25.5	426	218	304	365	19.5	36	19.5	3.9
18	62	99	29.5	20.5	275	169	529	205	16.8	31.5	17.2	2.7
19	48	74	46	25.5	226	245	502	147	14.4	29.5	16.8	2.6
20	41	68	66	24.5	147	218	275	114	14.0	27.5	16.1	2.4
21	36	50	41	38	152	192	192	92	12.8	29.5	14.4	14.1
22	33.5	176	31.5	33.5	160	586	147	78	14.4	38	13.4	36.5
23	38	683	297	53	114	711	114	62	103	29.5	12.5	98
24	55	228	521	43	106	1,670	126	53	217	134	10.8	31
25	41	130	118	50	372	1,520	142	46	461	53	10.5	27.5
26	48	88	82	76	596	693	92	38	2,130	38	10.0	22
27	43	71	82	731	218	450	74	36	1,040	31.5	10.0	16.4
28	59	56	71	2,290	242	290	62	33.5	432	31.5	10.2	13.4
29	38	50	48	1,520	130	635	53	-	624	27.5	27.5	12.2
30	33.5	62	43	967	682	562	48	-	644	24.5	22.5	9.5
31	29.5	54	-	450	-	365	41	-	779	-	15.4	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	746	29.5	122	189	3,790	11,630
August	683	29.5	117	181	3,630	11,130
September	521	24.5	72.3	112	2,170	6,660
October	2,290	17.9	226	350	7,010	21,500
November	4,200	106	478	740	14,350	44,050
December	2,740	122	596	922	18,460	56,650
Calendar year	-	-	-	-	-	-
January	2,840	41	486	752	15,070	46,240
February	1,680	33.5	210	325	5,880	18,040
March	2,130	12.8	226	350	6,990	21,460
April	610	24.5	93.9	145	2,820	8,650
May	59	10.0	24.2	37.4	749	2,300
June	98	2.4	14.4	22.3	433	1,330
Fiscal year 1948-49	4,200	2.4	223	346	81,350	249,600

Peak discharge (base, 5,600 m.g.d.).--Oct. 28 (8 p.m.) 5,680 m.g.d. (8,790 sec.-ft.); Nov. 11 (11:30 a.m.) 10,700 m.g.d. (16,600 sec.-ft.); Jan. 1 (9:30 p.m.) 8,300 m.g.d. (12,800 sec.-ft.).

Waiilikahi Stream near Waimanu

Location.--Lat. 20°07'40", long. 155°39'55", 30 feet upstream from Waimanu trail bridge, 1.7 miles upstream from confluence with Waimanu Stream, 1.9 miles southeast from head of Awini ditch, and 2.2 miles southwest of Waimanu. Altitude of gage, 2,740 feet (by barometer).

Drainage area.--0.4 square mile.

Records available.--March 1939 to June 1949. Prior to July 1941, published as Waimanu-iiiii Stream near Waimanu.

Average discharge.--10 years, 6.45 million gallons a day (9.98 second-feet).

Extremes.--Maximum discharge during year, 135 million gallons a day (209 second-feet) Dec. 10 (gage height, 3.18 feet), from rating curve extended above 25 million gallons a day by test on model of station site; minimum, 0.50 million gallons a day (0.77 second-foot) Mar. 5-8.

1939-49: Maximum discharge, 544 million gallons a day (842 second-feet) Dec. 20, 1946 (gage height, 5.17 feet), from rating curve extended above 25 million gallons a day by test on model of station site; minimum, 0.15 million gallons a day (0.23 second-foot) Mar. 17, 18, 1944.

Remarks.--Records good. No diversions.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Sept. 23

0.5	0.95	0.9	4.4	1.6	19.2
.6	1.60	1.0	5.7	1.8	26.5
.7	2.4	1.2	9.0	2.0	35.5
.8	3.35	1.4	13.4		

Sept. 24 to June 30

0.4	0.37	0.8	3.03	1.4	11.5
.5	.81	.9	4.0	1.6	16.5
.6	1.42	1.0	5.1	1.8	23.5
.7	2.17	1.2	7.9	2.0	32

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3 25	3.8	7.5	30	7.4	2.0	7.2	0.59	1.18	9.2	1.42	3.8
2	1.68	1.99	4.1	7.6	2.69	2.35	30.5	.59	.72	4.7	3.2	3.3
3	4.5	3.65	1.68	1.94	2.05	1.64	19.1	.59	.55	3.2	2.95	7.2
4	10.5	2.2	1.21	1.42	4.4	1.24	3.85	1.56	.55	2.0	2.0	2.85
5	32	1.21	1.08	1.18	2.55	1.24	2.25	.71	.50	8,5	7.6	3.3
6	20.5	4.3	1.02	1.05	2.05	5.1	1.72	.59	.50	3.1	13.4	2.25
7	6.2	1.88	1.02	1.05	1.30	1.96	1.50	.55	.50	13.9	6.9	1.80
8	2.9	1.14	.95	.99	7.3	7.3	2.9	3.25	16.3	9.0	2.5	3.1
9	2.55	1.08	8.4	1.18	5.6	9.3	6.6	1.82	11.7	2.65	1.94	3.4
10	2.1	1.89	4.8	3.1	9.0	20.5	2.7	.77	3.25	2.0	1.50	1.64
11	18.3	2.9	2.7	1.42	4.9	6.9	11.6	.68	3.45	9.5	2.75	1.42
12	3.45	2.15	3.45	1.24	2.8	6.8	4.6	.63	8.6	11.3	1.95	2.1
13	2.35	6.8	5.6	2.15	1.64	15.9	1.87	.93	24.5	4.4	8.4	1.24
14	2.95	1.34	2.9	4.0	1.42	6.9	1.42	4.7	6.5	1.94	3.65	1.68
15	3.5	7.7	1.54	1.24	1.88	6.9	1.30	10.7	2.65	2.0	1.72	1.57
16	3.45	3.3	1.21	3.6	4.8	6.5	1.72	2.05	2.1	6.1	1.36	1.12
17	5.0	3.55	1.14	1.64	2.45	2.45	2.85	1.57	1.72	2.25	1.12	.93
18	7.1	5.4	1.14	1.40	2.45	2.1	1.94	.99	1.24	1.87	.99	1.50
19	6.2	2.65	2.3	2.75	4.0	3.65	1.50	.87	.93	4.8	2.3	1.36
20	12.1	5.1	2.25	15.4	2.95	2.5	1.24	.72	.77	3.4	2.2	.93
21	6.6	1.70	1.21	19.1	3.2	5.3	.87	.63	.72	7.5	1.36	.81
22	10.7	9.3	1.08	6.5	1.96	11.3	.81	.59	.77	9.1	1.42	3.4
23	7.3	5.0	24.5	14.6	4.7	11.5	.77	.55	3.5	7.4	1.18	7.6
24	9.8	1.60	3.9	3.1	1.72	27	.72	.55	8.0	28.5	.93	1.94
25	3.4	1.14	1.62	2.05	2.35	15.5	.72	.55	4.9	5.9	.87	2.4
26	1.60	1.08	1.12	4.0	1.94	5.4	1.24	.55	35.5	11.3	1.57	2.2
27	1.34	2.45	15.4	15.4	7.5	4.8	.77	.99	11.4	2.7	2.15	1.30
28	2.35	2.0	7.7	15.0	12.3	2.15	.63	1.85	4.3	2.6	18.3	1.42
29	1.40	1.14	2.3	13.1	6.8	26.5	.59	-	8.6	2.15	35.5	1.36
30	1.21	1.08	11.1	6.8	2.45	7.1	.59	-	4.2	1.64	7.9	3.9
31	7.6	2.3	-	10.1	-	2.95	.59	-	8.3	-	6.1	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	32	1.21	6.58	10.2	204	626
August	9.3	1.08	2.99	4.63	92.8	285
September	24.5	.95	4.20	6.50	126	386
October	30	.99	6.26	9.69	194	596
November	12.3	1.30	3.95	6.11	119	364
December	27	1.24	7.51	11.6	233	714
Calendar year 1948	105	.85	6.62	10.2	2,420	7,430
January	30.5	.59	3.76	5.82	117	358
February	10.7	.55	1.47	2.27	41.1	126
March	35.5	.50	5.75	8.90	178	547
April	28.5	1.64	6.15	9.52	185	567
May	35.5	.87	4.75	7.35	147	452
June	7.6	.81	2.43	3.76	72.8	223
Fiscal year 1948-49	35.5	.50	4.68	7.24	1,710	5,240

Peak discharge (base, 150 m.g.d.).--No peak above base.

Punalulu Stream near Waimanu

Location.--Lat. 20°08'50", long. 155°39'40", 200 feet upstream from Waimanu trail, 1.0 mile southeast from head of Awini ditch, 1.5 miles upstream from mouth, and 1.5 miles west of Waimanu. Altitude of gage, 1,870 feet (by barometer).

Drainage area.--1.4 square miles.

Records available.--March 1939 to June 1949.

Average discharge.--10 years, 4.22 million gallons a day (6.53 second-feet).

Extremes.--Maximum discharge during year, 74 million gallons a day (114 second-feet) Jan. 2, Mar. 26 (gage height, 3.08 feet), from rating curve extended above 4 million gallons a day by test on model of station site; minimum, 0.11 million gallons a day (0.17 second-foot) Mar. 6-8.

1939-49: Maximum discharge, 980 million gallons a day (1,520 second-feet) June 30, 1941 (gage height, 4.90 feet), from rating curve extended above 4 million gallons a day by test on model of station site (pool conditions then existing); minimum, 0.06 million gallons a day (0.09 second-foot) Oct. 14, 25, 26, 1945.

Remarks.--Records good above 0.5 million gallons a day, fair below. No diversions.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 12 to June 30)

0.3	0.29	0.8	4.0
.4	.68	1.0	6.6
.5	1.22	1.2	9.9
.6	1.93	1.4	13.7
.7	2.85	1.7	20.5

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.27	2.6	3.85	21.5	5.6	1.28	5.3	0.29	0.54	6.2	1.04	2.85
2	.63	.93	2.3	6.9	2.0	1.35	22.5	.27	.33	4.1	1.91	2.1
3	1.78	.97	.88	1.86	1.41	.99	14.0	.24	.22	2.6	1.77	5.4
4	5.2	1.09	.59	1.35	2.9	.63	3.45	.22	.17	1.62	1.24	1.93
5	17.2	.59	.42	.99	1.66	.54	1.77	a.24	.16	5.8	5.6	2.05
6	13.2	2.6	.36	.78	1.35	2.25	1.35	.27	.14	2.25	9.9	1.48
7	3.85	1.10	.36	.59	.88	1.00	1.10	.24	.14	10.1	5.3	1.16
8	1.41	.63	.29	.50	5.7	5.6	2.0	2.7	8.0	8.0	1.77	1.58
9	1.26	.46	5.1	.90	4.2	6.0	4.6	1.29	8.1	2.1	1.35	2.5
10	.90	.59	3.7	1.54	8.8	8.3	1.68	.42	2.65	1.55	1.04	1.10
11	11.7	1.24	1.28	.83	3.7	4.4	7.0	.33	2.65	5.6	1.70	.92
12	2.05	1.33	1.54	.88	2.05	4.8	3.95	.29	8.6	8.8	1.22	1.28
13	1.40	5.8	2.5	.87	1.22	9.5	1.41	.29	19.6	3.6	6.5	.78
14	1.98	.83	1.86	2.6	1.04	5.2	1.04	1.88	6.2	1.55	2.6	.73
15	1.79	4.3	.83	.73	.98	4.8	.93	8.3	2.1	1.29	1.22	.83
16	2.15	2.0	.63	1.22	3.5	5.0	1.31	1.30	1.48	5.0	.99	.63
17	2.5	2.2	.54	.83	1.70	1.67	2.3	.88	1.22	1.56	.83	.54
18	4.4	3.85	.59	.83	1.10	1.22	1.43	.54	.88	1.16	.73	.73
19	4.4	1.56	.76	1.43	2.85	2.0	.99	.46	.63	3.25	1.59	.78
20	8.6	3.8	1.24	10.8	1.85	1.31	.88	.39	.54	2.5	1.30	.54
21	4.5	1.17	.54	13.4	2.1	2.6	.63	.33	.46	6.2	.83	.50
22	7.0	6.7	.42	5.2	1.16	6.2	.59	.27	.42	7.3	.78	1.59
23	5.0	3.95	14.2	10.0	2.8	8.1	.54	.24	2.1	5.5	.68	5.5
24	5.1	1.22	3.3	2.35	.99	16.1	.50	.22	2.65	16.9	.54	1.30
25	2.2	.83	1.04	1.52	1.22	12.0	.50	.24	2.9	5.5	.57	1.04
26	1.22	.63	.68	2.3	1.04	4.0	.54	.27	23.5	8.2	1.41	1.38
27	.99	1.35	10.4	8.5	3.05	3.65	.46	.33	10.5	2.1	1.62	.78
28	1.68	1.26	6.8	11.0	7.7	1.41	.54	8.7	2.9	1.93	12.4	.78
29	.93	.63	2.3	10.8	5.3	16.6	.46	-	6.6	1.62	22.5	.68
30	.73	.50	7.2	6.0	1.48	5.8	.36	-	2.75	1.22	6.9	2.75
31	5.1	.70	-	5.8	-	2.1	.33	-	4.8	-	4.9	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	17.2	0.63	3.94	6.10	122	375
August	6.7	.46	1.85	2.86	57.4	176
September	14.2	.29	2.55	3.95	76.5	235
October	21.5	.50	4.35	6.73	135	414
November	8.8	.88	2.71	4.19	81.3	250
December	16.6	.54	4.72	7.30	146	449
Calendar year 1948	60	.27	4.09	6.33	1,500	4,600
January	22.5	.33	2.72	4.21	84.4	259
February	8.7	.22	1.12	1.73	31.4	96
March	23.5	.14	3.98	6.16	124	379
April	16.9	1.16	4.50	6.96	135	415
May	22.5	.54	3.31	5.12	103	315
June	5.5	.50	1.54	2.38	46.2	142
Fiscal year 1948-49	23.5	.14	3.13	4.84	1,140	3,500

Peak discharge (base, 100 m.g.d.).--No peak above base.
a No gage-height record; discharge interpolated.

Waiaalala Stream near Waimanu

Location.--Lat. 20°09'05", long. 155°39'55", 0.7 mile east from head of Awini ditch, 1.3 miles upstream from mouth, and 1.8 miles west of Waimanu. Altitude of gage, 1,880 feet (by barometer).

Drainage area.--0.2 square mile.

Records available.--March 1939 to June 1949.

Average discharge.--10 years, 0.720 million gallons a day (1.11 second-feet).

Extremes.--Maximum discharge during year, 14.4 million gallons a day (22.3 second-feet) Jan. 2 (gage height, 1.24 feet), from rating curve extended above 2.0 million gallons a day by test on model of station site; minimum, 0.17 million gallons a day (0.26 second-foot) Mar. 8.

1939-49: Maximum discharge, 67 million gallons a day (104 second-feet) Feb. 22, 1940 (gage height, 3.83 feet), from rating curve extended above 2.0 million gallons a day by test on model of station site; minimum, 0.10 million gallons a day (0.16 second-foot) Mar. 15, 1944.

Remarks.--Records fair except those for periods of no gage-height record, which are poor.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used May 30 to June 16)

0.2	0.15	0.6	2.39
.3	.38	.7	3.5
.4	.77	.8	4.8
.5	1.44	.9	6.35

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.25	0.35	0.27	4.2	0.50	0.32	0.75	0.25	0.19	0.7	0.44	0.47
2	.25	.29	.25	1.13	.44	.29	5.5	.25	.19	.6	.44	.38
3	.25	.29	.25	.62	.44	.29	2.0	.25	.19	.45	.41	.38
4	.29	.29	.25	.47	.41	.29	.95	.40	.19	.35	.44	.35
5	.99	.29	.25	.44	.41	.29	.65	.32	.19	.5	.60	.35
6	1.24	.35	.25	.41	.38	.29	.5	.27	.19	.40	.80	.32
7	.46	.29	.25	.38	.38	.29	.40	.25	.19	.9	.50	.32
8	.32	.27	.25	.35	.72	.53	.45	.64	.70	.75	.38	.32
9	.29	.25	.45	.42	.69	.41	.7	.29	.44	.45	.38	.29
10	.29	.25	.35	.35	1.55	.42	.45	.25	.39	.40	.38	.29
11	1.86	.25	.25	.32	.58	.33	.85	.25	.30	.6	.41	.32
12	.47	.50	.25	.29	.50	.66	.40	.25	1.29	.75	.35	.35
13	.38	.76	.29	.29	.44	.84	.34	.25	4.3	.45	.89	.29
14	.38	.29	.25	.29	.44	.49	.32	.25	1.12	.35	.41	.29
15	.35	.29	.23	.29	.44	.41	.32	.48	.54	.38	.38	.29
16	.32	.27	.21	.27	.44	.41	.35	.25	.44	.47	.35	.29
17	.35	.29	.21	.27	.41	.32	.45	.25	.38	.32	.35	.27
18	.44	.50	.21	.25	.38	.30	.38	.25	.35	.32	.35	.29
19	.38	.29	.21	.25	.38	.30	.34	.23	.32	.46	.38	.27
20	.72	.35	.21	1.74	.38	.28	.34	.23	.29	.35	.35	.25
21	.41	.27	.21	1.18	.35	.35	.34	.23	.27	.97	.32	.25
22	.59	.87	.21	.47	.35	.5	.32	.23	.27	.63	.32	.27
23	.44	.41	1.80	.88	.32	.9	.32	.23	.35	.47	.32	.25
24	.44	.32	.43	.44	.32	2.6	.32	.21	.42	1.45	.32	.23
25	.35	.29	.29	.38	.32	1.3	.32	.23	.40	.83	.37	.21
26	.35	.29	.25	.38	.32	.75	.30	.21	2.5	.83	.47	.21
27	.35	.29	1.47	.83	.32	.5	.30	.21	1.1	.54	.44	.21
28	.35	.27	1.24	.88	.48	.45	.30	.21	.65	.50	1.89	.21
29	.32	.27	.50	1.29	.60	2.2	.27	-	.85	.44	4.4	.21
30	.29	.25	1.38	.75	.32	1.0	.27	-	.6	.44	.88	.21
31	.55	.27	-	.62	-	.5	.25	-	.55	-	.54	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.86	0.25	0.475	0.735	14.7	45
August	.87	.25	.339	.525	10.5	32
September	1.80	.21	.431	.667	12.9	40
October	4.2	.25	.682	1.06	21.1	65
November	1.55	.32	.467	.723	14.0	43
December	2.6	.28	.607	.939	18.8	58
Calendar year 1948	7.5	.21	.665	1.03	243	747
January	5.5	.25	.637	.986	19.8	61
February	.64	.21	.272	.421	7.62	23
March	4.3	.19	.650	1.01	20.2	62
April	1.45	.32	.568	.879	17.0	52
May	4.4	.32	.621	.961	19.3	59
June	.47	.21	.288	.446	8.64	27
Fiscal year 1948-49	5.5	.19	.506	.783	185	567

Peak discharge (base, 100 m.g.d.).--No peak above base.
Note.--No gage-height record Dec. 18 to Feb. 4, Mar. 18 to Apr. 13; discharge computed on basis of records for Kukui and Paopao Streams.

Paopao Stream near Waimanu

Location.--Lat. 20°09'05", long. 155°40'05", 150 feet upstream from Waimanu trail, 0.6 mile east of intake to Awini ditch, and 1.9 miles west of Waimanu. Altitude of gage, 1,910 feet (by barometer).

Drainage area.--0.6 square mile.

Records available.--February 1939 to June 1949.

Average discharge.--10 years, 2.14 million gallons a day (3.31 second-feet).

Extremes.--Maximum discharge during year, 105 million gallons a day (162 second-feet) Jan. 2, Mar. 26, from rating curve extended above 8 million gallons a day by test on model of station site; maximum gage height, 3.13 feet Jan. 2; minimum, 0.12 million gallons a day (0.19 second-foot) Mar. 2-7.

1939-49: Maximum discharge, 462 million gallons a day (715 second-feet) Dec. 20, 1946 (gage height, 5.55 feet), from rating curve extended above 8 million gallons a day by test on model of station site; minimum, 0.08 million gallons a day (0.12 second-foot) July 27, 28, 1945.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversions.

Rating tables, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Nov. 28 to Dec. 3, Jan. 12 to Feb. 9)

July 1 to Sept. 23				Sept. 24 to June 30			
0.2	0.19	0.7	4.0	0.2	0.17	0.7	3.7
.3	.52	.8	5.3	.3	.46	.8	5.2
.4	1.03	1.0	8.7	.4	.94	1.0	8.6
.5	1.78	1.2	13.1	.5	1.63	1.2	13.1
.6	2.8			.6	2.55	1.4	18.4

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.36	0.98	1.09	17.0	2.05	0.29	2.15	0.21	0.15	1.6	0.42	1.15
2	.30	.48	.74	3.4	.78	.21	17.1	.21	.12	1.3	.58	.72
3	.33	.44	.36	1.01	.58	.17	5.6	.21	.12	.85	.58	1.72
4	1.90	.40	.27	.78	.96	.17	1.52	1.86	.12	.55	.53	.72
5	8.8	.36	.27	.58	.58	.17	.90	.75	.12	1.4	2.85	.62
6	7.2	1.20	.24	.46	.54	.35	.72	.24	.12	.75	4.5	.50
7	1.50	.52	.27	.39	.39	.25	.58	.21	.12	5.5	1.93	.42
8	.60	.37	.24	.35	2.95	2.0	.96	2.05	7	4	.58	.48
9	.52	.30	2.4	.76	2.4	.8	2.1	.50	4.5	1.3	.50	.81
10	.40	.27	1.90	.64	5.5	1.7	.67	.25	1.3	.7	.39	.42
11	7.8	.27	.48	.39	1.70	.6	4.6	.22	.55	3	.62	.39
12	1.00	.82	.56	.32	.90	1.9	1.40	.20	5	4.5	.39	.54
13	.91	3.7	.77	.33	.58	3	.58	.20	12	1.4	3.75	.35
14	1.00	.40	.54	.75	.50	1.88	.50	.5	2.5	.6	.86	.32
15	.70	1.87	.30	.32	.46	1.67	.46	2.5	1.0	.39	.46	.29
16	1.02	.71	.27	.39	1.10	1.77	.58	.55	.5	2.05	.39	.26
17	1.17	.74	.24	.29	.58	.54	1.24	.25	.35	.50	.32	.26
18	2.1	2.15	.24	.24	.39	.39	.54	.20	.27	.32	.32	.29
19	2.15	.64	.26	.29	.81	.39	.42	.20	.23	1.20	.54	.26
20	4.9	1.80	.42	7.9	.74	.32	.42	.20	.20	.80	.46	.24
21	1.78	.44	.24	7.0	.88	.47	.35	.18	.20	3.75	.32	.21
22	3.3	.43	.24	7.0	.39	1.64	.32	.18	.20	2.95	.29	.22
23	2.1	1.75	9.6	4.5	.51	3.0	.32	.18	.7	1.66	.26	1.35
24	1.50	.52	1.08	.84	.32	8.7	.29	.18	1.0	8.7	.24	.35
25	.85	.40	.39	.71	.29	5.5	.29	.15	.8	2.9	.26	.26
26	.60	.36	.32	.98	.29	1.12	.35	.15	15	3.55	1.01	.42
27	.56	.56	7.2	4.1	1.54	.98	.26	.15	3.5	.84	1.03	.26
28	.83	.48	4.0	5.3	2.85	.54	.32	.15	.85	.84	9.1	.21
29	.52	.33	1.16	6.2	1.78	9.3	.26	-	2.2	.58	17.8	.19
30	.44	.30	5.3	2.45	.35	2.2	.24	-	.7	.50	3.7	.64
31	3.15	.30	-	1.94	-	.84	.24	-	.6	-	2.15	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	8.8	0.30	1.94	3.00	60.3	185
August	3.7	.27	.784	1.21	24.3	75
September	9.6	.24	1.38	2.14	41.4	127
October	17.0	.24	2.50	3.87	77.6	238
November	5.5	.29	1.12	1.73	33.7	103
December	9.3	.17	1.71	2.65	52.9	162
Calendar year 1948	46	.17	2.27	3.51	829	2,540
January	17.1	.24	1.49	2.31	46.3	142
February	2.5	.15	.458	.709	12.8	39
March	15	.12	2.00	3.09	62.0	190
April	8.7	.32	1.97	3.05	59.0	181
May	17.8	.24	1.84	2.85	57.1	175
June	1.72	.19	.496	.767	14.9	46
Fiscal year 1948-49	17.8	.12	1.49	2.31	542	1,660

Peak discharge (base, 60 m.g.d.).--Jan. 2 (7 p.m.) 105 m.g.d. (162 sec.-ft.); Mar. 26 (about 3 p.m.) 105 m.g.d. (162 sec.-ft.).

Note.--No gage-height record Dec. 4-13, Feb. 10 to Apr. 14; discharge computed on basis of recorded range in stage and records for Kukui, Punalulu, and Waiaalala Streams.

Kukui Stream near Waimanu

Location.--Lat. 20°09'10", long. 155°40'10", 300 feet upstream from Waimanu trail crossing, 0.4 mile east from head of Awini ditch, and 2.1 miles west of Waimanu. Altitude of gage, 1,940 feet (by barometer).

Drainage area.--0.4 square mile.

Records available.--February 1939 to June 1949.

Average discharge.--10 years, 1.28 million gallons a day (1.98 second-feet).

Extremes.--Maximum discharge during year, 56 million gallons a day (87 second-feet) Jan. 2 (gage height, 3.18 feet), from rating curve extended above 5 million gallons a day by test on model of station site; minimum, 0.16 million gallons a day (0.25 second-foot) Mar. 1, 6, 7.

1939-49: Maximum discharge, 116 million gallons a day (179 second-feet) Oct. 23, 1941 (gage height, 3.97 feet), from rating curve extended above 5 million gallons a day by test on model of station site; minimum, 0.13 million gallons a day (0.20 second-foot) Oct. 25, 1945.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. No diversions.

Rating table, fiscal year 1948-49 (gage height, in feet and discharge, in million gallons a day)

0.2	0.18	0.5	1.30	1.0	5.2
.3	.46	.6	1.87	1.2	7.5
.4	.83	.8	3.3	1.4	10.2

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.32	0.75	0.57	7.5	1.12	0.46	1.22	0.29	0.21	1.15	0.61	0.97
2	.29	.45	.50	2.0	.72	.43	9.9	.29	.21	1.06	.61	.76
3	.29	.43	.38	.9	.64	.38	3.6	.29	.21	.83	.61	.97
4	.53	.40	.35	.74	.72	.35	1.41	1.15	.21	.61	.57	.72
5	3.65	.37	.32	.62	.61	.35	.92	.42	.21	1.11	1.36	.68
6	3.6	.7	.35	.56	.57	.40	.79	.29	.21	.64	2.3	.57
7	.97	.50	.32	.52	.50	.38	.72	.26	.21	2.05	1.17	.53
8	.50	.42	.29	.50	1.66	1.43	.83	1.21	2.5	2.05	.64	.53
9	.43	.37	1.14	.74	1.52	.93	1.47	.47	1.41	.72	.57	.57
10	.38	.35	.90	.61	3.45	1.15	.72	.26	.88	.61	.50	.46
11	4.4	.35	.40	.50	1.14	.64	2.65	.26	.59	1.50	.61	.46
12	.76	.49	.43	.43	.79	1.51	1.00	.24	3.8	1.76	.50	.53
13	.61	2.25	.52	.43	.64	2.45	.61	.21	9.5	.76	2.0	.43
14	.64	.43	.43	.50	.61	1.23	.53	.28	1.96	.61	.77	.40
15	.53	.61	.32	.40	.57	1.00	.53	1.43	.79	.53	.53	.40
16	.57	.49	.29	.40	.79	1.06	.61	.35	.61	1.08	.50	.38
17	.65	.46	.29	.35	.61	.57	.92	.26	.50	.57	.46	.38
18	1.00	1.09	.29	.35	.50	.50	.57	.24	.43	.50	.43	.38
19	1.00	.50	.31	.35	.64	.46	.50	.24	.40	.83	.50	.35
20	2.1	.95	.35	4.4	.64	.43	.50	.21	.38	.70	.46	.35
21	.88	.43	.28	3.2	.67	.46	.43	.21	.35	2.25	.40	.32
22	1.60	2.2	.26	1.13	.46	.76	.43	.21	.35	1.67	.40	.32
23	.98	.96	6	2.45	.46	1.64	.40	.21	.53	1.06	.38	.61
24	.84	.53	1.0	.76	.43	5.4	.40	.21	.67	4.4	.35	.38
25	.57	.46	.45	.64	.43	3.0	.38	.24	.64	1.75	.40	.35
26	.50	.43	.40	.72	.40	1.00	.40	.24	7.1	1.97	.79	.35
27	.46	.46	3.5	2.1	.70	.76	.35	.21	2.75	.83	.76	.29
28	.53	.43	1.8	2.6	1.27	.61	.38	.21	.89	.76	4.9	.29
29	.43	.40	1.1	3.6	1.32	4.6	.35	-	1.35	.68	10.8	.29
30	.35	.38	2.5	1.63	.50	1.48	.32	-	.88	.61	2.3	.35
31	1.3	.40	-	1.28		-	.32	-	.88	-	1.44	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.4	0.29	1.02	1.58	31.7	97
August	2.25	.35	.627	.970	19.4	60
September	6	.26	.868	1.34	26.0	80
October	7.5	.35	1.38	2.14	42.9	132
November	3.45	.40	.836	1.29	25.1	77
December	5.4	.35	1.18	1.83	36.6	112
Calendar year 1948	25	.26	1.29	2.00	471	1,450
January	9.9	.32	1.10	1.70	34.2	105
February	1.43	.21	.371	.574	10.4	32
March	9.5	.21	1.34	2.07	41.6	128
April	4.4	.50	1.19	1.84	35.6	109
May	10.8	.35	1.25	1.93	38.6	119
June	.97	.29	.479	.741	14.4	44
Fiscal year 1948-49	10.8	.21	.977	1.51	356	1,100

Peak discharge (base, 30 m.g.d.).--Jan. 2 (8 p.m.) 56 m.g.d. (87 sec.-ft.).

Note.--No gage-height record July 30 to Aug. 9, Sept. 19 to Oct. 7; discharge computed on basis of recorded range in stage and records for Paopao and Waiaalala Streams.

Awini ditch at East Honokaneiki Gulch, near Niulii

Location.--Lat. 20°09'55", long. 155°43'10", at flume across East Honokaneiki Gulch, 4½ miles southeast of Niulii. Altitude of gage, 2,000 feet (from topographic map).

Records available.--October 1927 to June 1949.

Average discharge.--20 years (1928-38, 1939-49), 11.9 million gallons a day (18.4 second-feet).

Extremes.--Maximum discharge during year, 31 million gallons a day (48 second-feet) July 11 (gage height, 3.56 feet); minimum, 1.80 million gallons a day (2.79 second-feet) Mar. 8.
1927-49: Maximum discharge, 34 million gallons a day (53 second-feet) Jan. 9, 1935 (gage height, 3.76 feet); no flow occasionally.

Remarks.--Records good except those for period of faulty or no gage-height record, which are poor. Awini ditch diverts water at altitude 2,000 feet from all streams between Waikaloa and Honokane. Water used for irrigation in vicinity of Kohala.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.3	17.0	17.2	27	25	10.8	16.8	3.9	3.85	25	8.5	13
2	5.0	7.8	14.1	24	19.3	12.1	21.5	3.7	3.15	23	7.4	12
3	8.4	6.2	7.2	14.7	13.6	10.1	19.3	3.45	2.6	20.5	12	25
4	8.9	5.3	5.1	11.4	21	7.2	17.5	9.2	2.25	12.1	18	17
5	27	4.7	3.9	9.5	14.3	6.0	12.8	5.8	2.1	21	22	12
6	27	11.2	3.45	7.8	10.1	16.1	11.4	3.9	1.94	17.6	27	10
7	23	8.9	3.45	6.5	8.3	9.5	11.4	3.75	1.85	26	23	9.0
8	12.1	5.5	3.15	5.7	23	23	13.3	8.6	10.1	27	15	9.5
9	8.9	4.4	15.5	7.6	23	25	18.4	11.4	23.5	16.4	9.5	15
10	6.7	5.0	8.8	9.7	27	24	17.5	5.2	11.3	11.4	7.0	10
11	23.5	7.8	9.5	8.2	23	21.5	13.8	4.3	14.9	16.2	11	7.5
12	18.6	8.6	11.4	6.4	18.0	22.5	18.4	3.85	11.1	27	12	9.0
13	10.1	20.5	14.4	6.9	12.1	27	12.1	3.95	27	19.4	16	8.0
14	10.1	7.6	13.4	13.6	10.1	24	9.5	7.9	19.0	11.4	19	6.0
15	9.3	12.3	6.4	7.2	11.9	25	8.9	25	10.4	9.5	9.0	4.5
16	15.0	13.3	5.1	6.4	23	24	11.4	12.0	8.9	16.0	6.0	4.0
17	15.0	13.0	4.3	6.1	15.2	15.9	11.6	8.9	8.3	12.4	5.0	3.7
18	25	16.2	4.1	5.3	10.1	12.1	13.5	5.6	6.7	7.8	4.5	4.5
19	23	10.2	4.2	10.3	15.7	19.6	8.9	4.7	5.3	12.0	5.4	3.5
20	27	21	5.9	18.8	11.4	14.3	7.8	3.95	4.5	15.8	8.0	3.2
21	22	8.8	4.0	27	14.0	17.5	6.7	3.45	3.95	18.4	6.5	3.15
22	25	24	3.8	25	8.9	27	6.5	3.15	3.85	25	5.0	9.0
23	21	20	15.0	27	17.5	27	6.0	2.9	13.9	23	4.2	17.3
24	23	9.4	16.1	17.6	10.1	27	5.7	2.75	11.4	27	3.7	6.3
25	16.6	6.7	8.9	12.0	12.1	27	5.5	2.7	19.5	23	3.5	4.9
26	9.2	5.6	6.6	16.4	11.4	21	5.9	2.85	29	25	7.5	4.4
27	7.2	6.7	17.2	24.5	10.2	19.3	5.1	2.65	26	18	6.5	3.55
28	18.5	7.2	23	27	24.5	12.8	5.2	3.85	17.4	16	13	3.9
29	7.5	5.3	14.6	27	24	25	5.0	-	24	14	28	3.7
30	6.0	4.4	15.5	25	12.8	21	4.4	-	21	9.5	20	8.9
31	21	5.4	-	24	-	13.6	4.0	-	24	-	17	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	27	5.0	15.7	24.3	486	1,490
August	24	4.4	10.0	15.5	310	951
September	23	3.15	9.51	14.7	285	875
October	27	5.3	15.0	23.2	466	1,430
November	27	8.3	16.0	24.8	481	1,470
December	27	6.0	19.0	29.4	588	1,800
Calendar year 1948	27	3.15	14.2	22.0	5,190	15,930
January	21.5	4.0	10.8	16.7	336	1,030
February	25	2.65	5.83	9.02	163	501
March	29	1.85	12.0	18.6	373	1,140
April	27	7.8	18.2	28.2	546	1,680
May	27	3.5	11.6	17.9	360	1,110
June	25	3.15	8.38	13.0	252	772
Fiscal year 1948-49	29	1.85	12.7	19.6	4,650	14,250

Note.--Faulty or no gage-height record Apr. 24 to June 20; discharge computed on basis of recorded ranges in stage and records for Kohala ditch.

East Honokaneiki intake to Awini ditch at East Honokaneiki Gulch, near Niulii

Location.--Sharp-crested weir, lat. 20°09'55", long. 155°43'15", on intake tunnel delivering water from East Honokaneiki Gulch to Awini ditch, on west side of gulch, and 4½ miles southeast of Niulii. Altitude of gage, 2,000 feet (from topographic map).

Records available.--October 1927 to June 1938, July 1939 to June 1949.

Average discharge.--18 years (1928-36, 1937-38, 1939-40, 1941-49), 1.13 million gallons a day (1.75 second-feet).

Extremes.--Maximum discharge during year, 7.6 million gallons a day (11.8 second-feet) Sept. 23 (gage height, 1.37 feet); no flow Mar. 8.
1927-38, 1939-49: Maximum discharge, 9.1 million gallons a day (14.1 second-feet) Jan. 4, 1943 (gage height, 1.54 feet); no flow occasionally.

Remarks.--Records good except those for period of no gage-height record, which are poor. Intake diverts water form East Honokaneiki Gulch to Awini ditch for irrigation in vicinity of Kohala.

Revisions (fiscal years).--W 725: 1928-30.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.06	1.09	1.00	1.75	0.98	0.48	0.94	0.06	0.02	0.66	0.33	0.35
2	.06	.32	.86	.87	.68	.48	1.24	.06	.02	.48	.32	.25
3	.06	.23	.26	.56	.60	.41	1.35	.04	.02	.44	.32	.30
4	.89	.17	.12	.48	.68	.26	.60	.10	.01	.38	.32	.22
5	5.7	.12	.08	.44	.56	.23	.48	.10	.01	.51	.70	.17
6	5.0	.52	.06	.38	.48	.95	.41	.06	.01	.41	1.2	.12
7	2.2	.35	.06	.29	.38	.48	.48	.04	.01	.95	.55	.10
8	.71	.17	.04	.26	1.34	1.34	.52	.12	.88	.72	.40	.09
9	.38	.10	1.30	.32	1.35	1.70	.83	.35	1.22	.44	.35	.09
10	.29	.08	1.34	.41	1.15	1.78	.48	.14	.52	.38	.30	.08
11	4.2	.17	.41	.32	.56	1.25	.73	.08	.48	.73	.35	.08
12	1.36	.68	.57	.23	.48	1.30	.56	.06	.74	.68	.25	.08
13	.56	2.25	1.48	.39	.44	1.56	.26	.06	1.62	.44	1.00	.07
14	.44	.32	.80	.68	.41	1.12	.23	.40	.68	.35	.55	.07
15	.38	.90	.26	.26	.50	1.06	.20	.93	.48	.32	.35	.07
16	.64	.70	.14	.17	.60	1.06	.29	.44	.41	.35	.22	.06
17	1.21	.52	.10	.12	.48	.79	.26	.35	.38	.35	.14	.05
18	3.1	.52	.06	.10	.41	.64	.23	.17	.26	.29	.10	.05
19	1.96	.35	.10	.30	.48	.87	.20	.10	.20	.35	.15	.04
20	2.65	1.49	.12	1.27	.41	.75	.17	.08	.14	.48	.13	.04
21	1.30	.38	.06	1.85	.44	.87	.17	.06	.12	.56	.10	.04
22	2.4	3.95	.04	1.25	.32	1.50	.17	.04	.10	.60	.09	.45
23	1.51	1.43	2.4	1.60	.69	1.61	.14	.03	.42	.93	.07	.87
24	1.78	.38	1.53	.87	.44	1.70	.14	.02	.56	1.5	.06	.26
25	.90	.23	.48	.56	.48	1.55	.12	.02	.63	.85	.15	.14
26	.41	.17	.26	.71	.48	.87	.12	.02	1.69	.90	.35	.10
27	.32	.17	1.40	1.60	5.1	.79	.12	.02	.82	.60	.40	.06
28	.48	.17	1.33	1.75	1.25	.68	.10	.02	.44	.50	1.3	.04
29	.26	.12	.68	1.60	1.25	1.45	.10	-	.56	.42	2.2	.04
30	.20	.10	.90	.97	.68	.79	.10	-	.48	.36	1.1	.16
31	2.05	.13	-	1.11	-	.60	.08	-	.56	-	.55	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	5.7	0.06	1.40	2.17	43.5	133
August	3.95	.08	.590	.913	18.3	56
September	2.4	.04	.608	.941	18.2	56
October	1.85	.10	.757	1.17	23.5	72
November	5.1	.32	.803	1.24	24.1	74
December	1.78	.23	.997	1.54	30.9	95
Calendar year 1948	5.7	.04	1.03	1.59	378	1,160
January	1.35	.08	.381	.589	11.8	36
February	.93	.02	.142	.220	3.97	12
March	1.69	.01	.467	.723	14.5	44
April	1.5	.29	.564	.873	16.9	52
May	2.2	.06	.465	.719	14.4	44
June	.87	.04	.151	.234	4.54	14
Fiscal year 1948-49	5.7	.01	.615	.952	225	688

Note.--Faulty or no gage-height record Apr. 24 to June 20; discharge computed on basis of records for Kohala ditch and partial gage-height record.

208538 O - 52 - 9

Kohala ditch at Pololu, near Niulii

Location.--Lat. 20°10'20", long. 155°44'15", on open section of ditch in Pololu Valley just downstream from boundary between land of Honokane and land of Pololu, $2\frac{3}{4}$ miles upstream from mouth of Pololu Stream, and 4 miles south of Niulii. Altitude of gage, 1,100 feet (from topographic map).

Records available.--August 1927 to June 1949.

Average discharge.--20 years (1928-38, 1939-49), 25.8 million gallons a day (39.9 second-feet).

Extremes.--Maximum discharge during year, 62 million gallons a day (96 second-feet) Sept. 28 (gage height, 3.52 feet); no flow, May 2, 3.
1927-49: Maximum discharge, 78 million gallons a day (121 second-feet) Mar. 14, 1947 (gage height, 4.06 feet); no flow occasionally.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,200 feet from all streams west of Honokane. Water is used for irrigation in vicinity of Kohala.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19.2	33.5	27.5	50	40	25.5	33.5	17.6	17.6	43	27.5	33.5
2	19.2	23	29.5	40	36	25.5	33.5	16.7	23	38	5.1	31.5
3	23	21	21	31.5	29.5	24	33.5	16.7	22	36	10.6	48
4	24	20	18.4	27.5	33.5	20	29.5	20.5	20	27.5	29.5	36
5	48	18.4	17.6	24	29.5	18.4	27.5	20.5	20	33.5	35	29.5
6	48	24	16.7	22	25.5	31.5	27.5	17.6	19.2	33.5	48	27.5
7	40	24	16.7	20.5	22	23	29.5	15.2	19.2	43	45	24
8	29.5	20	16.0	19.2	39.5	33.5	25.5	19.7	25	43	33.5	24
9	25.5	18.4	25	21	38	43	25.5	25.5	43	31.5	27.5	27.5
10	22	19.2	33.5	23	43	39	24	18.4	31.5	24	24	24
11	40	22	24	22	40	40	25.5	16.7	33.5	29	27.5	22
12	38	22	25.5	19.2	35	38	27.5	16.7	28.5	43	27.5	23
13	25.5	36	27	20	27	43	25.5	16.7	50	36	31.5	22
14	25.5	23	29.5	29.5	24	40	24	21	40	25.5	36	21
15	24	24	20	21	25	38	23	40	25.5	23	25.5	20
16	29.5	29.5	18.4	19.2	38	38	29.5	29.5	23	29.5	23	20
17	29.5	25.5	17.6	19.2	31	33.5	27.5	24	23	24	22	19.2
18	40	27.5	16.0	18.4	25	29.5	29.5	19.2	20	21	21	20
19	40	24	15.2	23	29	38	23	17.6	18.4	23	22	20
20	40	33.5	18.4	29.5	27	33.5	23	16.0	16.7	29.5	24	19.2
21	38	25.5	16.7	45	29	36	21	16.0	20	27.5	22	19.2
22	40	36	16.7	40	23	43	20	15.2	23	40	22	20
23	38	38	29	45	33	43	19.2	15.2	29.5	38	22	38
24	40	25.5	36	36	24	40	19.2	15.2	31.5	48	21	27.5
25	31.5	21	24	27.5	26	38	19.2	15.2	40	43	21	22
26	24	19.2	21	29.5	25	33.5	20	15.2	48	45	24	21
27	22	20	31.5	36	24	33.5	19.2	15.2	48	38	23	20
28	25.5	21	43	45	40	29.5	19.2	16.0	40	38	32	20
29	22	19.2	29.5	48	38	33.5	18.4	-	43	36	50	20
30	20	17.6	30	40	27.5	29.5	17.6	-	38	29.5	40	25.5
31	33	17.6	-	40	-	29.5	17.6	-	43	-	38	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	48	19.2	31.1	48.1	964	2,960
August	38	17.6	24.2	37.4	749	2,300
September	43	15.2	23.7	36.7	711	2,180
October	50	18.4	30.1	46.6	932	2,860
November	43	22	30.9	47.8	927	2,840
December	43	18.4	33.7	52.1	1,040	3,200
Calendar year 1948	50	15.2	28.8	44.6	10,530	32,300
January	33.5	17.6	24.5	37.9	758	2,330
February	40	15.2	18.9	29.2	529	1,620
March	50	16.7	29.8	46.1	923	2,830
April	48	21	34.0	52.6	1,020	3,130
May	50	5.1	27.8	43.0	861	2,640
June	48	19.2	24.8	38.4	745	2,290
Fiscal year 1948-49	50	5.1	27.8	43.0	10,160	31,180

Note.--No gage-height record Nov. 10-29; discharge computed on basis of recorded range in stage and records for Awini ditch.

Kehena ditch near Kohala

Location.--Three sharp-crested weirs, lat. 20°07'25", long. 155°54'05", at old Honokane weir, near head of West Branch of Honokanenui Gulch, and 8½ miles southeast of Kohala. Altitude of gage, 3,850 feet (from topographic map).

Records available.--December 1917 to November 1919, April 1928 to June 1949.

Average discharge.--21 years (1928-49), 7.41 million gallons a day (11.5 second-feet).

Extremes.--Maximum discharge during year, 46 million gallons a day (71.2 second-feet) Jan. 9 (gage height, 1.21 feet); minimum, 0.20 million gallons a day (0.31 second-foot) May 25, 26.
1917-19, 1928-49: Maximum discharge, 86 million gallons a day (133 second-feet) Jan. 27, 1918 (gage height, 2.16 feet, datum then in use); no flow during dry periods.

Remarks.--Records good except those for period of no gage-height record, which are fair. Intake on Honokanenui Stream 2 miles upstream from station, at altitude of about 4,200 feet. Water used for irrigation in vicinity of Hawi.

Revisions (fiscal years).--W 740: 1930.

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.25	10.8	8.8	27.5	21	4.0	21	0.61	1.12	24	2.25	3.9
2	2.1	3.05	8.2	11.7	10.8	8.7	20.5	.50	.84	13.9	4.0	4.4
3	8.7	1.90	3.25	3.45	5.9	6.0	24.5	.50	.72	8.4	5.1	14.4
4	9.1	1.26	1.90	2.1	9.5	2.65	9.7	.40	.61	4.1	3.25	6.4
5	34	1.12	1.12	1.57	4.6	a1.8	4.9	.30	.61	10.0	10.5	3.7
6	33	3.2	.72	1.12	2.65	a12	6.2	.30	.61	7.2	18.6	2.65
7	17.3	3.3	.72	.84	1.73	a6	7.6	.30	.50	23	10.5	1.73
8	5.9	1.26	.72	.61	19.4	a18	11.8	.72	6.7	16.5	4.4	1.41
9	3.45	.72	5.1	.50	16.0	a30	23.5	1.31	17.0	5.4	2.85	2.25
10	2.25	3.45	8.6	1.96	28.5	22.5	7.2	.84	4.6	3.45	1.90	1.73
11	20	5.9	4.9	1.41	8.0	19.9	15.1	.72	3.45	8.3	2.45	1.12
12	10.2	4.1	7.1	1.12	7.7	10.9	16.1	.61	4.5	18.1	2.25	.98
13	3.05	9.9	6.3	2.5	3.9	28	5.4	1.48	26.5	7.4	2.1	.72
14	1.90	2.85	6.8	8.5	3.05	17.6	3.25	10.9	13.4	3.45	3.45	.61
15	2.05	4.5	2.45	2.25	2.85	16.1	3.05	21.5	4.9	2.45	1.90	.61
16	4.6	5.7	1.90	1.73	14.6	17.2	12.3	9.1	3.7	2.65	1.26	.50
17	7.7	2.25	1.41	1.73	9.6	7.5	13.9	6.5	2.85	2.65	.84	.40
18	17.9	1.90	1.26	1.41	3.45	9.7	6.8	2.65	1.90	2.1	.61	.30
19	15.7	1.73	1.12	5.5	3.25	20	5.5	1.73	1.26	4.4	.50	.30
20	10.6	8.2	1.26	8.9	2.65	14.7	4.9	1.26	.98	3.9	.61	.30
21	7.7	3.55	.72	22.5	3.05	17.9	3.05	.98	.72	4.7	.50	.30
22	12.8	8.0	.86	14.7	2.45	30.5	2.65	.72	.72	12.1	.50	.26
23	10.5	11.6	10.9	23	15.2	27	2.25	.72	3.4	7.2	.50	7.7
24	11.9	3.1	7.2	6.8	8.3	31.5	1.90	.61	8.5	23	.30	2.7
25	9.0	1.41	2.85	3.25	12.6	36	1.73	.61	16.0	11.4	.20	1.41
26	3.05	.98	1.41	3.5	9.2	18.3	1.57	.61	30	19.0	.20	.84
27	1.90	.84	12.3	17.7	8.7	14.2	1.26	.50	23.5	5.4	.30	.72
28	2.25	.72	15.2	26	22	6.8	1.12	.84	11.0	7.4	.38	1.90
29	2.1	.72	3.5	26.5	11.4	33.5	1.12	-	16.1	5.4	13.9	1.41
30	1.57	.72	7.1	17.1	5.1	27	.84	-	12.1	2.85	5.8	3.15
31	8.6	1.56	-	20.5	-	9.9	.72	-	21	-	3.7	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	34	1.57	9.17	14.2	284	872
August	11.6	.72	3.56	5.51	110	338
September	15.2	.72	4.52	6.99	136	416
October	27.5	.50	8.64	13.4	268	822
November	28.5	1.73	9.24	14.3	277	850
December	36	1.8	17.0	26.3	526	1,610
Calendar year 1948	49	.50	8.81	13.6	3,220	9,900
January	24.5	.72	7.79	12.1	241	741
February	21.5	.30	2.42	3.74	67.8	208
March	30	.50	7.74	12.0	240	736
April	24	2.1	8.99	13.9	270	828
May	18.6	.20	3.41	5.28	106	324
June	14.4	.26	2.29	3.54	68.8	211
Fiscal year 1948-49	36	.20	7.11	11.0	2,590	7,960

a No gage-height record; discharge computed on basis of records for Awini ditch.

Waikoloa Stream near Kamuela

Location.--Modified Columbus-type control, lat. 20°03'15", long. 155°39'55", 350 feet downstream from Parker Ranch boundary and 2.1 miles north of Kamuela. Altitude of gage, 3,500 feet (from topographic map).

Drainage area.--1.0 square miles.

Records available.--May 1947 to June 1949.

Extremes.--Maximum discharge during year, 545 million gallons a day (843 second-feet) Jan. 11 (gage height, 5.47 feet), from rating curve extended above 10 million gallons a day by logarithmic plotting; minimum, 1.46 million gallons a day (2.26 second-feet) Mar. 5-8.

1947-49: Maximum discharge, that of Jan. 11, 1949; minimum, 1.39 million gallons a day (2.15 second-feet) Dec. 15, 16, 1947.

Revisions.--The maximum discharge for fiscal year 1948 has been revised to 470 million gallons a day (727 second-feet) Mar. 2, 1948 (gage height, 5.17 feet), superseding figure published in Water-Supply Paper 1125.

Remarks.--Records poor.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)

1.3	1.52	1.6	4.8	2.1	16.2
1.4	2.4	1.7	6.4	2.3	24
1.5	3.4	1.9	10.4	2.6	40

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	4.2	6.3	19.2	5.8	2.8	4.6	1.87	1.61	7.0	2.15	3.95
2	2.85	2.6	4.2	7.2	2.9	2.8	11.6	1.78	1.52	5.4	3.05	3.7
3	4.1	2.3	2.8	2.7	2.6	2.4	12.8	1.78	1.52	3.7	3.1	5.2
4	5.7	2.15	2.2	2.3	3.55	2.3	4.5	1.78	1.52	2.7	2.5	3.0
5	17.6	2.05	2.05	2.15	2.8	2.3	3.0	1.70	1.46	6.3	6.9	3.1
6	12.0	3.3	1.96	1.96	3.0	4.4	2.6	1.70	1.46	3.95	7.8	2.7
7	5.0	2.7	1.96	1.96	2.3	2.7	2.4	1.70	1.46	7.8	6.8	2.9
8	2.9	2.2	1.87	1.87	8.6	4.9	4.0	4.8	3.85	6.9	3.1	3.95
9	2.6	2.2	4.4	1.87	7.2	7.4	11.1	3.05	8.2	3.1	2.6	4.0
10	3.35	2.7	4.4	2.7	8.5	11.0	3.15	2.05	2.7	2.6	2.3	2.6
11	15.5	3.15	3.0	2.15	5.2	6.3	25	1.96	2.3	6.0	2.8	2.5
12	4.1	2.7	3.0	1.96	4.5	4.6	6.3	1.87	2.1	10.3	2.6	2.8
13	3.2	3.3	3.2	4.3	2.7	18.4	3.1	1.87	9.9	5.0	4.1	2.4
14	4.4	2.2	2.85	4.5	2.7	5.2	2.6	3.05	6.0	2.7	3.5	2.4
15	5.4	5.6	2.4	2.2	2.5	4.5	2.4	6.2	3.1	2.5	2.5	2.4
16	3.75	3.35	2.2	2.05	4.1	4.3	3.2	2.9	2.9	4.2	2.2	2.15
17	5.2	3.0	2.05	1.96	3.4	2.8	5.5	2.7	2.8	2.8	2.05	2.05
18	5.4	4.0	1.96	1.96	2.7	2.5	3.25	2.15	2.3	2.6	1.96	2.55
19	5.5	4.3	2.05	2.5	3.4	3.0	2.8	1.96	1.96	4.3	2.9	2.2
20	7.4	4.8	2.15	8.3	3.45	2.7	2.7	1.87	1.87	3.75	2.7	2.15
21	6.3	2.6	2.05	14.9	3.85	4.8	2.3	1.78	1.78	7.2	2.2	2.3
22	11.0	5.4	1.96	7.0	3.1	15.2	2.3	1.70	1.87	8.1	2.05	5.4
23	7.6	4.0	15.4	13.0	6.9	9.1	2.15	1.70	2.05	7.0	1.96	7.9
24	8.8	2.5	5.5	3.3	3.0	14.4	2.15	1.61	5.0	17.6	1.87	2.8
25	3.85	2.2	2.95	2.5	3.4	9.6	2.15	1.61	4.4	5.3	1.78	2.3
26	2.7	2.15	2.3	2.4	3.1	5.4	2.15	1.61	15.3	7.2	1.87	2.15
27	2.5	2.95	12.3	9.6	4.1	3.4	2.05	1.61	9.2	3.1	1.96	2.15
28	2.5	2.7	9.1	11.0	6.3	2.7	2.2	1.61	5.0	2.7	8.2	2.3
29	2.3	2.2	2.85	9.0	5.9	14.8	2.05	-	6.5	2.5	18.4	2.3
30	2.2	2.15	6.1	4.4	3.4	8.3	1.96	-	4.6	2.2	7.7	2.5
31	6.1	2.5	-	5.1	-	3.5	1.87	-	8.0	-	6.3	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	17.6	2.2	5.64	8.73	175	537
August	5.6	2.05	3.04	4.70	94.2	289
September	15.4	1.87	3.92	6.07	118	361
October	19.2	1.87	5.10	7.89	158	485
November	8.6	2.3	4.16	6.44	125	383
December	18.4	2.3	6.08	9.41	188	578
Calendar year 1948	43	1.78	5.19	8.03	1,900	5,830
January	25	1.87	4.51	6.98	140	429
February	6.2	1.61	2.21	3.42	62.0	190
March	15.3	1.46	4.01	6.20	124	381
April	17.6	2.2	5.22	8.08	156	480
May	18.4	1.78	3.93	6.08	122	374
June	7.9	2.05	3.03	4.69	90.8	279
Fiscal year 1948-49	25	1.46	4.26	6.59	1,550	4,766

Peak discharge (base, 100 m.g.d.).--Sept. 27 (5 p.m.) 118 m.g.d. (183 sec.-ft.); Jan. 11 (4:30 p.m.) 545 m.g.d. (843 sec.-ft.).

Waikoloa Stream at Marine Dam, near Kamuela

Location.--Modified Columbus-type control, lat. 20°02'45", long. 155°39'55", 160 feet upstream from Marine Dam and 1.5 miles north of Kamuela. Altitude of gage, 3,450 feet (from topographic map).

Drainage area.--1.3 square miles.

Records available.--May 1947 to June 1949.

Extremes.--Maximum discharge during year, 615 million gallons a day (952 second-feet) Jan. 11 (gage height, 5.53 feet), from rating curve extended above 10 million gallons a day; minimum, 0.79 million gallons a day (1.22 second-feet) Mar. 6-8.
1947-49: Maximum discharge, that of Jan. 11, 1949; minimum, that of Mar. 6-8, 1949.

Remarks.--Records good except those above 15 million gallons a day and those for periods of no gage-height record, which are fair. Diversions above station for stock and domestic use.

Rating table, fiscal year 1948-49 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 31 to Feb. 9, Apr. 3-20)

1.5	1.00	2.0	8.7
1.6	1.78	2.1	11.7
1.7	2.9	2.2	15.3
1.8	4.4	2.4	24.5
1.9	6.3	2.6	37

Discharge, in million gallons, fiscal year July 1948 to June 1949

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.7	4.9	6.9	31.5	6.8	2.35	4.7	1.16	1.00	9.3	1.62	3.95
2	2.25	2.25	4.7	10.6	2.7	2.45	15.4	1.16	.95	5.7	2.5	3.5
3	5.5	2.0	2.55	2.7	2.0	1.89	18.9	1.16	.90	3.65	2.7	5.2
4	6.8	1.78	1.89	2.0	3.15	1.70	5.1	1.08	.90	2.25	1.89	2.8
5	28.5	1.70	1.70	1.78	2.35	1.70	2.7	1.08	.90	6.8	7.3	2.8
6	18.2	2.8	1.62	1.55	2.7	4.4	2.25	1.08	.84	3.9	9.2	2.35
7	6.0	2.25	1.47	1.47	1.78	2.35	2.0	1.08	.84	8.4	8.0	2.45
8	2.8	1.70	1.39	1.39	10.6	4.6	4.1	5.7	3.6	8.7	2.8	3.6
9	2.25	1.70	4.1	1.31	8.2	9.2	16.1	3.05	10.6	2.8	2.1	4.1
10	3.15	2.35	4.4	2.05	12.3	13.8	3.25	1.62	2.35	2.25	1.78	2.1
11	23.5	2.85	2.8	1.55	5.7	9.6	39	1.39	1.78	5.9	2.35	1.89
12	4.8	2.35	2.7	1.39	5.2	4.6	8.3	1.31	1.54	13.4	2.25	2.35
13	2.9	3.05	2.85	3.75	2.35	23.5	3.05	1.23	13.1	5.8	3.65	1.89
14	4.6	1.89	2.7	5.1	2.25	5.9	2.25	2.25	7.2	2.35	3.4	1.89
15	6.0	6.1	2.0	1.70	2.0	3.95	2.0	7.5	2.9	2.0	2.0	1.89
16	3.95	3.35	1.78	1.47	3.95	4.0	3.0	2.55	2.35	3.95	1.62	a1.6
17	5.7	2.25	1.62	1.39	3.45	2.35	6.9	2.35	2.45	2.35	1.47	a1.5
18	5.8	3.85	1.62	1.39	2.25	1.89	3.2	1.62	1.78	2.0	1.39	a2.0
19	6.6	4.4	1.62	1.89	3.2	2.25	2.45	1.47	1.39	3.8	2.4	a1.7
20	9.0	5.5	1.78	8.9	3.05	2.1	2.35	1.31	1.23	3.6	2.35	a1.6
21	7.5	2.35	1.62	22	3.65	4.9	1.89	1.16	1.16	8.0	1.62	a1.8
22	15.8	5.9	1.55	8.0	2.7	22	1.70	1.08	1.23	10.0	1.47	a6
23	9.2	4.5	20.5	18.5	8.7	12.7	1.62	1.08	1.39	7.9	1.39	a10
24	12.2	2.1	7.1	3.2	2.7	21	1.55	1.00	4.7	26	1.31	2.55
25	4.5	1.78	3.05	2.1	3.2	12.4	1.62	1.00	5.3	6.1	1.23	1.89
26	2.55	1.70	1.89	1.78	2.7	5.9	1.55	1.00	22	8.6	1.23	1.70
27	2.25	2.65	16.3	10.8	3.75	3.2	1.55	1.00	11.9	2.8	1.39	1.70
28	2.25	2.35	12.8	14.8	7.5	2.25	1.70	1.00	5.6	2.25	11.5	1.89
29	2.0	1.78	2.9	13.5	6.4	21.5	1.55	-	7.7	1.89	28	1.89
30	1.89	1.62	7.3	4.9	3.35	11.6	1.39	-	4.4	1.70	9.8	2.1
31	6.1	1.81	-	5.7	-	3.4	1.23	-	10.9	-	7.7	-

Month	Million gallons a day			Second-feet (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	28.5	1.89	7.01	10.8	217	667
August	6.1	1.62	2.82	4.36	87.6	269
September	20.5	1.39	4.24	6.56	127	390
October	31.5	1.31	6.13	9.46	190	584
November	12.3	1.78	4.35	6.73	131	401
December	23.5	1.70	7.27	11.2	225	692
Calendar year 1948	54	1.23	6.09	9.42	2,230	6,840
January	39	1.23	5.30	8.20	164	504
February	7.5	1.00	1.77	2.74	49.5	152
March	22	.84	4.35	6.73	135	414
April	26	1.70	5.80	8.97	174	534
May	28	1.23	4.17	6.45	129	397
June	10	1.5	2.76	4.27	82.7	254
Fiscal year 1948-49	39	.84	4.69	7.25	1,710	5,260

Peak discharge (base, 100 m.g.d.).--Sept. 27 (5:30 p.m.) 158 m.g.d. (244 sec.-ft.); Dec. 13 (3 a.m.) 110 m.g.d. (170 sec.-ft.); Dec. 22 (9 p.m.) 104 m.g.d. (161 sec.-ft.); Jan. 11 (4:30 p.m.) 615 m.g.d. (952 sec.-ft.).

a No gage-height record; discharge computed on basis of recorded range in stage and records for Waikoloa Stream near Kamuela.

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements on the island of Hawaii at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on Hawaii during fiscal year July 1948 to June 1949

Date	Stream	Tributary to--	Locality	Discharge	
				Second-feet	Million gallons a day
Aug. 9	Lahomene.....	Pacific Ocean....	At altitude 3,250 feet, near Waimanu.	1.28	0.827
Oct. 9	....do.....	....do.....	....do.....	1.08	.698
Feb. 5	....do.....	....do.....	....do.....	.844	.545
Apr. 11	....do.....	....do.....	....do.....	19.8	12.8
June 18	....do.....	....do.....	....do.....	2.40	1.55
Aug. 9	Kakaauki.....	....do.....	At altitude 2,930 feet, near Waimanu.	.285	.184
Oct. 9	....do.....	....do.....	....do.....	.672	.434
Dec. 12	....do.....	....do.....	....do.....	4.70	3.04
Feb. 5	....do.....	....do.....	....do.....	.421	.272
Apr. 16	....do.....	....do.....	....do.....	4.26	2.75
June 18	....do.....	....do.....	....do.....	.502	.324

INDEX

☆U. S. GOVERNMENT PRINTING OFFICE : O - 1952